GA-5010

Embedded Gaming Board support AMD® R-Series APU, 4 displays, 2 GbE, 4 COMs, NVRAM, Gaming I/O 72-pin golden finger

User's Manual

© **Copyright 2010. All Rights Reserved**

Manual Edition 1.0, September, 2012

This document contains proprietary information protected by copyright. All rights are reserved; no part of this manual may be reproduced, copied, translated or transmitted in any form or by any means without prior written permission of the manufacturer.

The content of this document is intended to be accurate and reliable; the original manufacturer assumes no responsibility for any inaccuracies that may be contained in this manual. The original manufacturer reserves the right to make improvements to the products described in this manual at any time without prior notice.

Trademarks

IBM, EGA, VGA, XT/AT, OS/2 and PS/2 are registered trademarks of International business Machine Corporation

Award is a trademark of Award Software International, Inc

Intel is a trademark of Intel

RTL is a trademark of Realtek

VIA is a trademark of VIA Technologies, Inc

Microsoft, Windows, Windows NT and MS-DOS are either trademarks or registered trademarks of Microsoft Corporation

All other product names mentioned herein are used for identification purpose only and may be trademarks and/or registered trademarks of their respective companies

Limitation of Liability

While reasonable efforts have been made to ensure the accuracy of this document, the manufacturer and distributor assume no liability resulting from errors or omissions in this document, or from the use of the information contained herein.

For more information on GA-5010 or other AEWIN products, please visit our website http://www.aewin.com.tw.

For technical supports or free catalog, please send your inquiry to info@aewin.com.tw

Table of Content

Table of Content....3
Chapter 1. General Information....4
1.1 Introducing....4
1.2 Specification....4
1.3 Order Information....7
1.4 Packaging....7
1.5 Precautions....8
1.6 Board Placement....9
1.7 Board Dimension....10
Chapter 2. Connector/Jumper Configuration....11
2.1 Connector/Jumper Location and Definition....11
2.2 Connector and Jumper Setting....15
2.3 Compact Flash™Card Socket Pin Define....28
Chapter 3. BIOS Setup....29
3.1 Quick Setup....29
3.2 Entering the CMOS Setup Program....30
3.3 Menu Options....32
3.4 Advanced Menu....33
3.5 Chipset Menu....43
3.6 Boot Menu....51
3.7 Security Menu....54
3.8 Exit....55
Appendix A: Development Kit (optional)....56

Chapter 1. General Information

1.1 Introducing

SGA-5010, a Box/System leverage AMD Fusion R-series APU which with excellent computing/graphic capabilities, three DVI-D + one HDMI display, Dual Giga Ethernet, four USB 3.0 + eight USB 2.0 interfaces, optional I/O and security module for casino application, … and more, which provide excellent performance for various applications as multi-player, multi-display, high-end 3D game, …etc. Windows® WES 7 and Linux Ubuntu 10/11 are supported. Also included a 72-pin golden finger for all gaming kits and refurbishing machines market.

1.2 Specification

■ ***System***	
CPU	AMD® socket FS1r2 for R-series Quad/Dual core
	APU, 35W max.
BIOS	AMI® UEFI BIOS
Chipset	AMI® A75
System Memory	Two DDR3-1600 SODIMM socket support up to 16GB
Watchdog Timer	255 levels timer interval, (1sec. to 255min.), setup by software.
■ ***Audio***	
Audio Chipset	HDA
Power amp.	6W Stereo power amp.; jumpers for optional volume control external VR
Audio Interface	5+1 channel audio jack on rear edge
	2x amplified speaker out through golden finger
■ ***Ethernet***	
Ethernet Interface	2x Gigabit Ethernet
■ ***Storage***	
SSD	One CF socket
	Or 2GB PATA NANDrive (onboard optional); Pin header for write protection

HDD	Two SATA3.0 (6Gb/s) connectors with 4-pin SATA power connector
■ ***Security***	
CPU Security	AES, RNG, Content protection
Physical Security	Onboard Storage (optional)
Software Security	DIP-8 socket for optional Crypto Memory
	TPM 1.2 (optional)
■ ***Gaming***	
NVRAM	On-board battery backup of 32KB SRAM Optional up to 4.5MB NVRAM or 2.5MB MRAM
Timers	1x 1mS timer and 4x Programmable timer with timeout interrupt
EEPROM	DIP 8-pin socket for optional I²C EEPROM or Crypto Memory
Digital I/O	72-pin golden finger gaming I/O interface - 15x Photo-isolated digital inputs - 16x TTL digital inputs - 24x 500mA current sink output by MOSFET - 2x 2A high current sink output by MOSFET
FPGA	All input with programmable de-bounce Timer 4+1 with interrupt 32-bit Random Number Generator Lamp outputs with programmable flash and dimming Serious out for external lamps modules for decoration Programmable PWM output
I/O expansion	Pin header for optional gaming I/O & NVRAM expansion module
■ ***Expansion***	
Expansion slot	One PCI-E x16 slot (PCIe x8 signal),
	One mini-PCIe socket for PCIe x1 Or one mSATA (default mSATA)
	LPC, I2C, SPI header
■ ***System I/O***	

COM	4 x COM - COM1 - Full RS-232, DB9 - COM2 - simple RS-232/RS-485, DB9 - COM3 - simple RS-232 (pin header) or cctalk (jumper select) - COM4 - simple RS-232 (pin header)
USB	4x USB 3.0 port at rear I/O
	8 x USB2.0 internal - 2x by 180° Vertical type-A socket - 6x by pin header
■ ***Hardware monitoring***	
System Heath Monitoring	Measurement of CPU core and system temperature with thermal trip
■ ***Power Supply***	
Voltage	DC 5V & DC12V input from 20-pin Golden finger
■ ***Software***	
O/S	Microsoft® Windows® WES7 and Linux Ubuntu 10/11 support
■ ***Mechanical and Environment***	
Environmental	Operating Temperature: 0 – 60 ºC (32 ºF – 140 ºF)
	Storage Temperature: -20 – 85 ºC (-4 ºF – 185 ºF)
	Relative Humidity: 10-85 % RH, non-condensing
Compliant	FCC/CE Class A
Dimension	170mm x 210mm
■ ***Applications***	
Main Application	Multi-display video slot/poker machine
	Multi-display amusement machine
	Multi-player Roulette/Baccarat system
	Multi-player Racing/Shooting game
	Bingo room island system

1.3 Order Information

■ ***Ordering Information***	
GA-5010A	AMD R-series APU based Gaming Board with HDMI, 3x DVI-D, 2x GbE, 4x COM, 4x USB 3.0
■ ***Optional***	
DK-GA5010-01	- R217A-01; R217A I/O Testing Board
	- 46L-G00028-00; R217 I/O Testing Board Cable for GA-5010
	- 46L-IUSB01-00; USB cable 2x5 (2.54mm)
	- 46L-S4B402-00; Dual end 4 Pin power cable.
	- 46L-SATA07-00; SATA Cable w/ 35cm
R283	Casino feature expansion module
* Note: All specifications are subject to change without prior notice	

1.4 Packaging

Please make sure that the following items have been included in the package before installation.

1. GA-5010 board
2. Quick Installation Guide (Optional)
3. Cables (Optional)
4. CD-ROM that contains the following folders:

(1) Manual

(2) Driver

If any item of above is missing or damaged, please contact your dealer or retailer from whom you purchased the GA-5010. Keep the box and carton when you probably ship or store GA-5010 in near future. After you unpack the goods, inspect and make sure the packaging is intact. Do not plug the power adapter to the appliance of GA-5010 if you already find it appears damaged.

Note: Keep the GA-5010 in the original packaging until you start installation.

1.5 Precautions

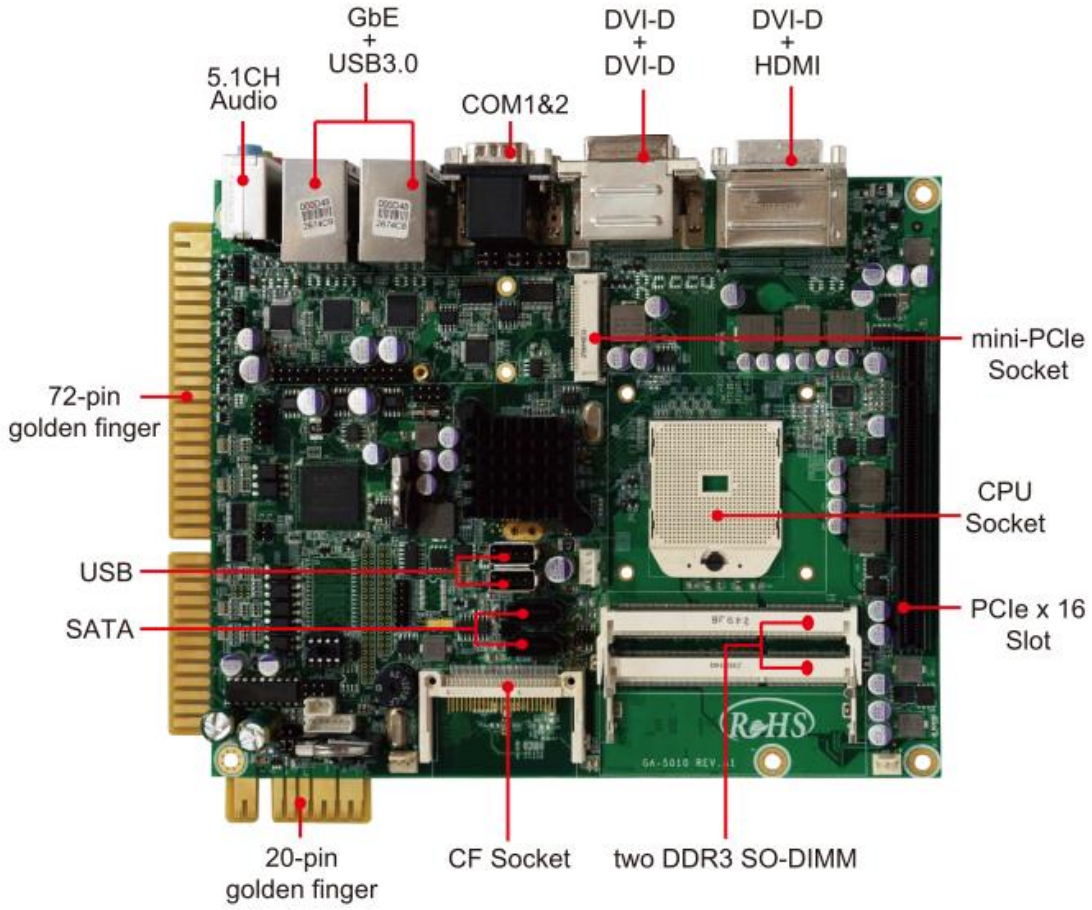
Please make sure you properly ground yourself before handling the GA-5010 board or other system components. Electrostatic discharge can be easily damage the GA-5010 board.

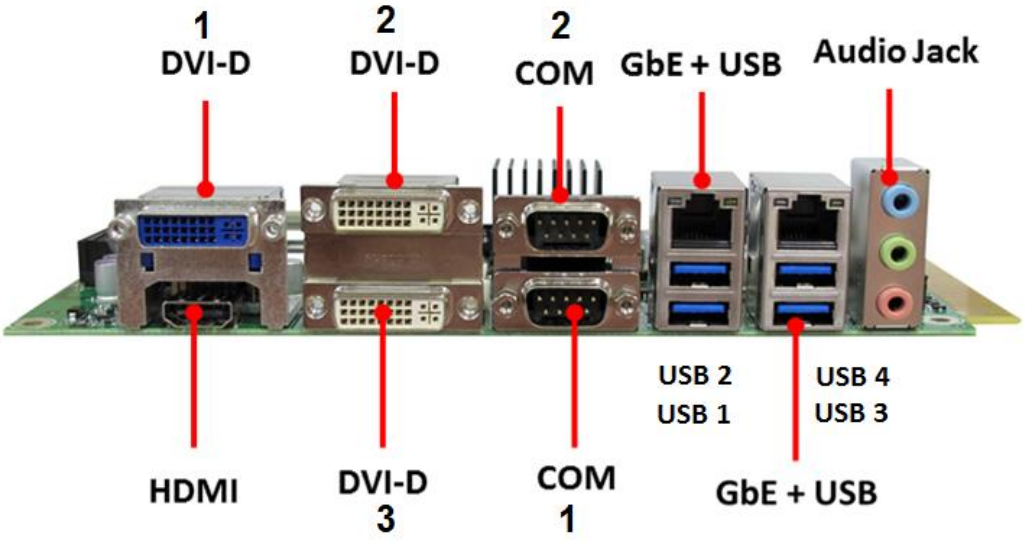
Do not remove the anti-static packing until you are ready to install the GA-5010 board.

Ground yourself before removing any system component from it protective anti-static packaging. To ground yourself, grasp the expansion slot covers or other unpainted parts of the computer chassis.

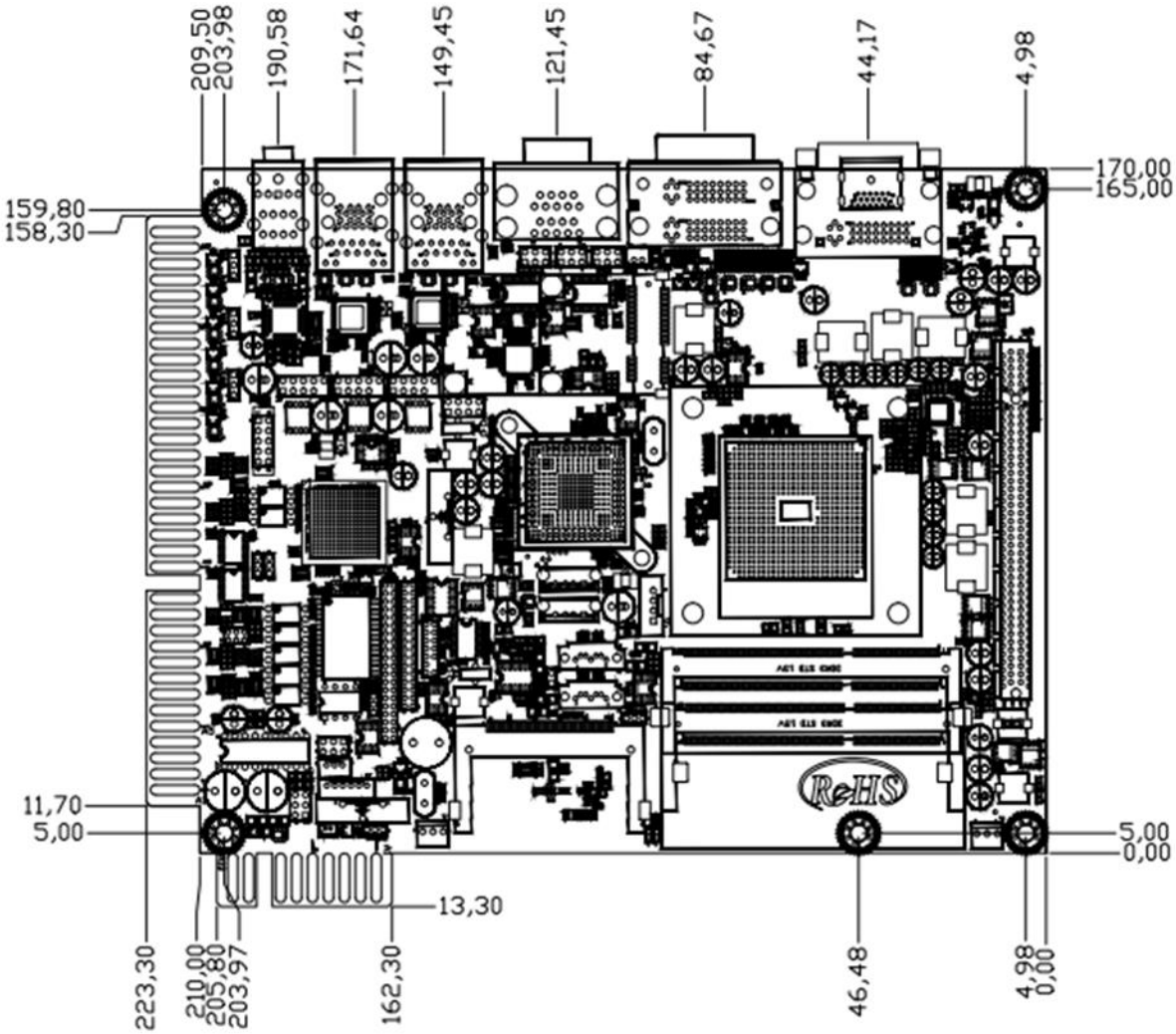
Handle the GA-5010 board by its edges and avoid touching the components on it.

1.6 Board Placement





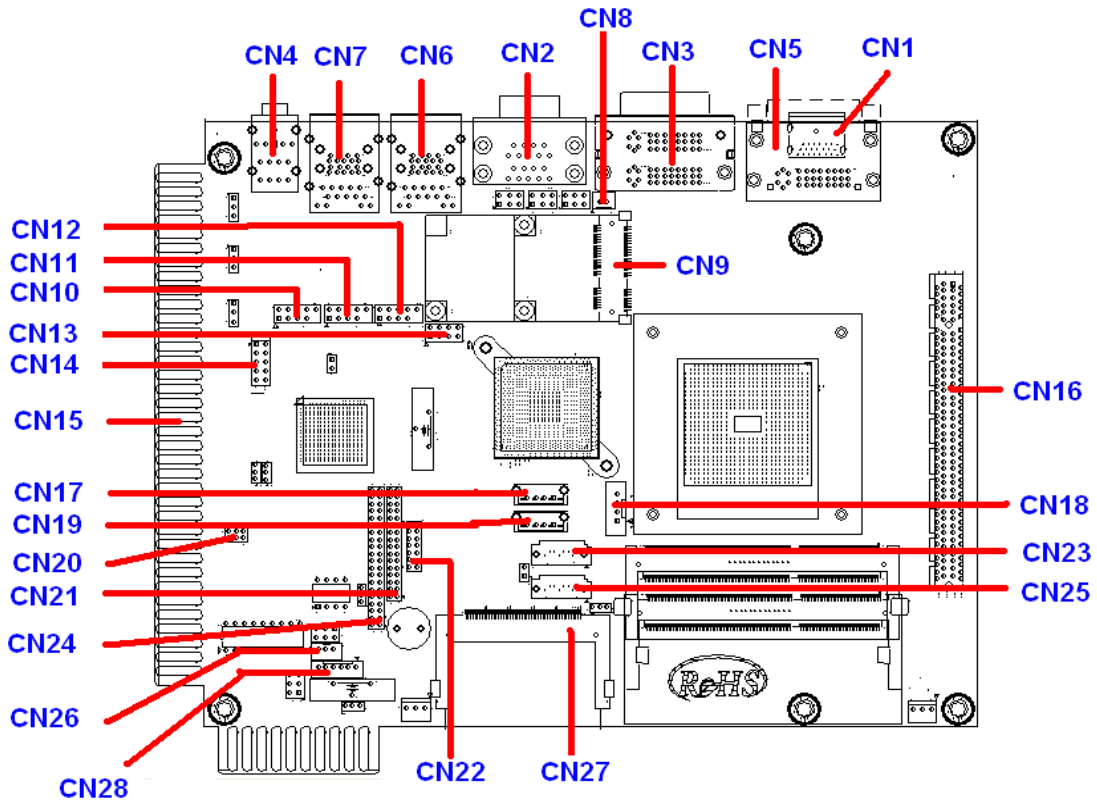
1.7 Board Dimension



Chapter 2. Connector/Jumper Configuration

2.1 Connector/Jumper Location and Definition

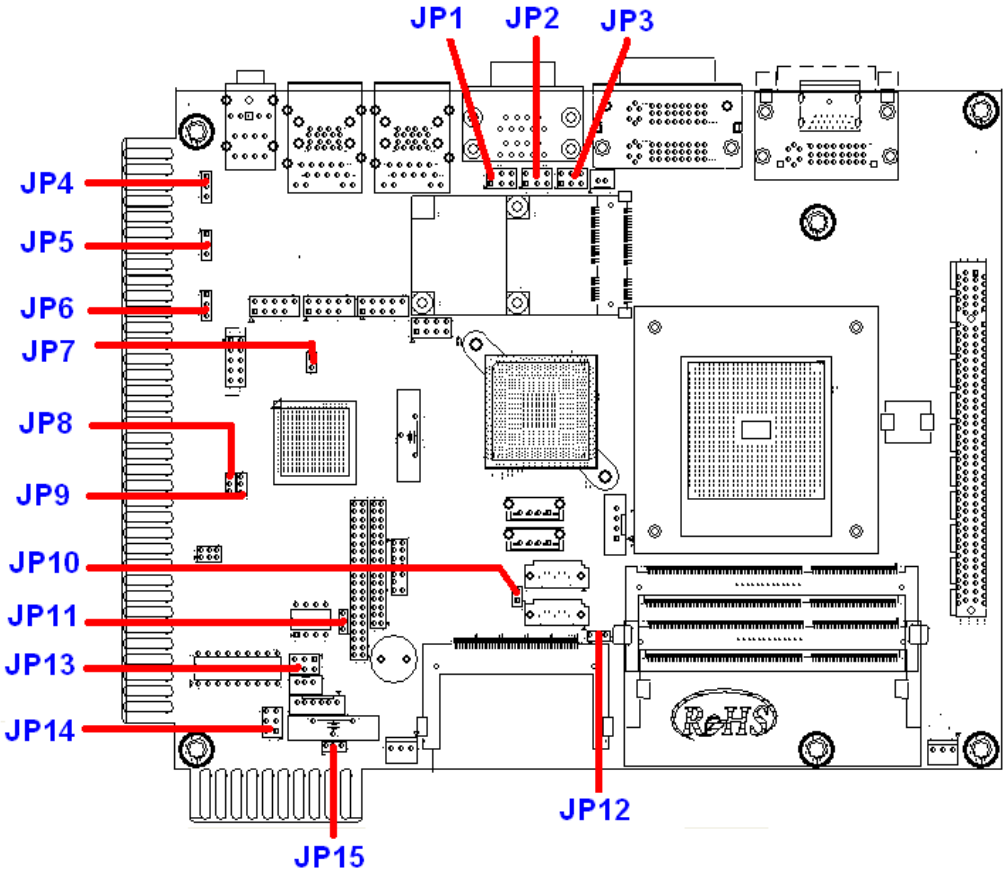
Connector:



CN1	**HDMI Connector**
CN2	**COM 1/2 Connector (DB9*2)**
CN3	**DVI-D Port 2/3**
CN4	**Audio Jack**
CN5	**DVI-D Port 1**
CN6	**LAN1 & USB 0/1(USB 3.0)**
CN7	**LAN2 & USB 2/3(USB 3.0)**
CN8	**MINI-PCIE LED Connector.(WLAN)**

CN9	MINI-PCIE Socket.
CN10	USB Port 2/3 (USB 2.0)
CN11	USB Port 4/5 (USB 2.0)
CN12	USB Port 6/7 (USB 2.0)
CN13	SPI Flahs Download Pin Header(For Debug Purpose)
CN14	FPGA Download Pin Header(For Debug Purpose)
CN15	GOLDEN-FINGER1
CN16	PCIE x16 Socket(Support x8 Only)
CN17	USB Port 1(USB 2.0)
CN18	SATA Power Connector
CN19	USB Port 0(USB 2.0)
CN20	Door Pin Header
CN21	R283 daughter board expansion
CN22	LPC Pin Header
CN23	SATA Port 0
CN24	R283 daughter board expansion
CN25	SATA Port 1
CN26	COM4(Simple RS232)
CN27	CF Socket
CN28	COM3(Simple RS232 / CCTALK)

Jumper:

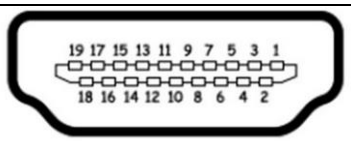


JP1	COM2 MODE SELECT (1-3short 2-4short : RS232 ; 3-5short 4-6short : RS485)
JP2	COM2 MODE SELECT (1-3short 2-4short : RS232 ; 3-5short 4-6short : RS485)
JP3	COM2 MODE SELECT (1-2: RS232 ; 3-4: RS485 4-Wire ; 5-6: RS485 2-Wire)
JP4	GPO Port Power Level Select (1-2: +5V ; 2-3: +12V)
JP5	GPO Port Power Level Select (1-2: +5V ; 2-3: +12V)
JP6	GPO Port Power Level Select (1-2: +5V ; 2-3: +12V)
JP7	FPGA RESERVED
JP8	GPI Port Power Level Select (1-2: +5V ; 2-3: +12V)

JP9	GPI Port Power Level Select (1-2: +5V ; 2-3: +12V)
JP10	RESET
JP11	EEPROM_WP (1-2:ON 2-3OFF)
JP12	NANDrive_WP_N(1-2:ON 2-3:OFF)
JP13	COM3 MODE SELECT (1-3short 2-4short: SIM232; 3-5short 4-6short: CCTALK)
JP14	AUDIO (1-3short 2-4short: Audio ON; 3-5short 4-6short: Audio OFF)
JP15	Clear CMOS (1-2: Hold CMOS; 2-3: Clear CMOS)

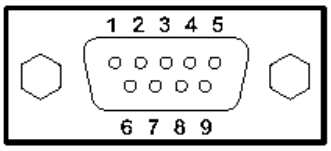
2.2 Connector and Jumper Setting

CN1 : HDMI



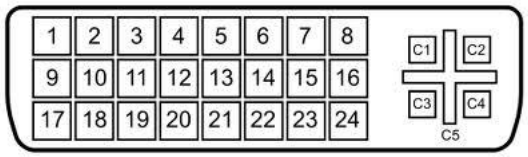
Pin	Signal	Pin	Signal
1	TMDS Data2+	11	TMDS Clock Shield
2	TMDS Data2 Shield	12	TMDS Clock-
3	TMDS Data2-	13	CEC (Control)
4	TMDS Data1+	14	Reserved (N.C.)
5	TMDS Data1 Shield	15	SCL (DDC clock)
6	TMDS Data1-	16	SDA (DDC data)
7	TMDS Data0+	17	DDC/CEC Ground
8	TMDS Data0 Shield	18	+5V Power (power EDID/DDC)
9	TMDS Data0-	19	Hot Plug detect
10	TMDS Clock+		

CN2 : COM1 & COM2



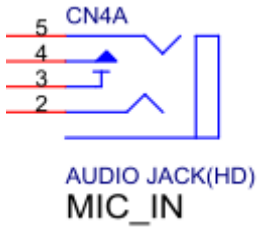
Pin	Signal	Pin	Signal
A1	DCD	B1	DCD
A2	RXD	B2	RXD
A3	TXD	B3	TXD
A4	DTR	B4	DTR
A5	Ground	B5	Ground
A6	DSR	B6	DSR
A7	RTS	B7	RTS
A8	CTS	B8	CTS
A9	R1	B9	R1

CN3 : DVI-D Port 2/3



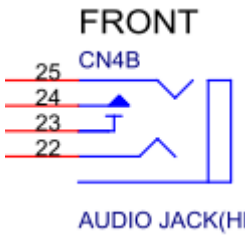
Pin	Define	Pin	Define
M1	CASE GND	M2	CASE GND
CK1	DP0_TX0_N	CK2	DP0_TX0_P
CK3	GND	CK4	-
CK5	-	CK6	DP0_AUX_P
CK7	DP0_AUX_N	CK8	-
CK9	DP0_TX1_N	CK10	DP0_TX1_P
CK11	GND	CK12	-
CK13	-	CK14	+5V
CK15	GND	CK16	DVID_HPD
CK17	DP0_TX2_N	CK18	DP0_TX2_P
CK19	GND	CK20	-
CK21	-	CK22	GND
CK23	DP0_TX3_N	CK24	DP0_TX3_P
C1		C2	
C3	-	C4	-
C5		-	

CN4A:AUDIO Connector



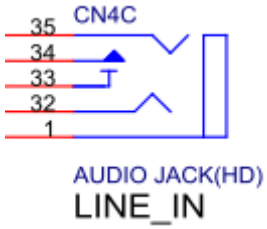
Pin	Define	Pin	Define
2	MIC_L	3	GND
4	MIC_JD	5	MIC_R

CN4B:AUDIO Connector



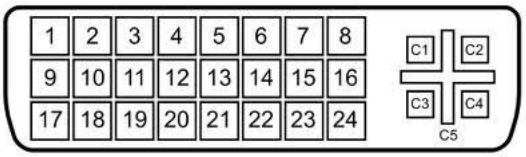
Pin	Define	Pin	Define
22	SPKR_OUT_L	23	GND
24	FRONT_JD	25	SPKR_OUT_R

CN4C:AUDIO Connector



Pin	Define	Pin	Define
32	LINE_L	33	GND
34	LINE_JD	35	LINE_R

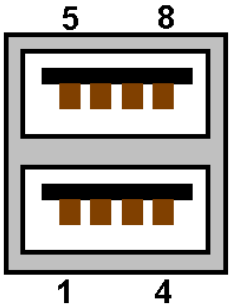
CN5: DVI-D Port 1

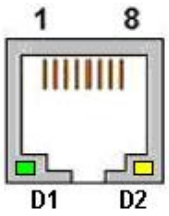


Pin	Define	Pin	Define
M1	CASE GND	M2	CASE GND
CK1	DP0_TX0_N	CK2	DP0_TX0_P
CK3	GND	CK4	-
CK5	-	CK6	DP0_AUX_P
CK7	DP0_AUX_N	CK8	-
CK9	DP0_TX1_N	CK10	DP0_TX1_P

CK11	GND	CK12	-
CK13	-	CK14	+5V
CK15	GND	CK16	DVID_HPD
CK17	DP0_TX2_N	CK18	DP0_TX2_P
CK19	GND	CK20	-
CK21	-	CK22	GND
CK23	DP0_TX3_N	CK24	DP0_TX3_P
C1		C2	
C3	-	C4	-
C5		-	

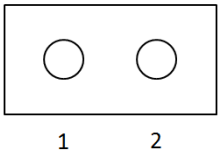
CN6/7 : USB and 1000/100 LAN RJ45 Jack





Pin	Signal	Pin	Signal
1	5VUSB0	1	TX+
2	USBDT0-	2	TX-
3	USBDT0+	3	N/C
4	Ground	4	Ground
5	5VUSB0	5	Ground
6	USBDT1-	6	N/C
7	USBDT1+	7	RX+
8	Ground	8	RX-

CN8 : MINI-PCIE LED Connector.(WLAN)

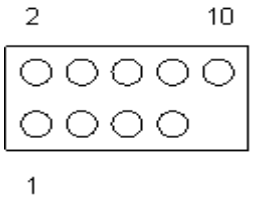


Pin	Define	Pin	Define
1	MINIPCIE_LED1	2	MINIPCIE_WLAN_N

CN9 : mSATA(Default) / mini-PCIE Socket.

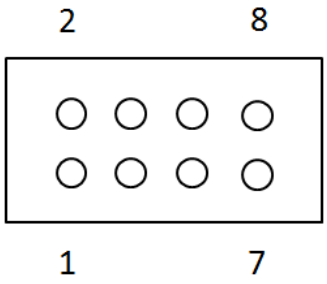
Pin	Define	Pin	Define
1	WAKE#	27	GND
2	3.3V	28	+1.5V
3	RESERVED	29	GND
4	GND	30	SMB_CLK
5	RESERVED	31	PETN0
6	1.5V	32	SMB_DATA
7	CLKREQ#	33	PETP0
8	RESERVED	34	GND
9	GND	35	GND
10	RESERVED	36	USB_D-
11	REFCLK-	37	RESERVED
12	RESERVED	38	USB_D+
13	REFCLK+	39	RESERVED
14	RESERVED	40	GND
15	GND	41	- RESERVED
16	RESERVED	42	LED_WWAN#
17	RESERVED	43	RESERVED
18	GND	44	LED_WLAN#
19	RESERVED	45	RESERVED
20	RESERVED	46	LED_WPAN#
21	GND	47	RESERVED
22	PERST#	48	+1.5V
23	PERN0	49	RESERVED
24	+3.3VAUX	50	GND
25	PERP0	51	RESERVED
26	GND	52	+3.3V

CN10/11/12 : USB pin header



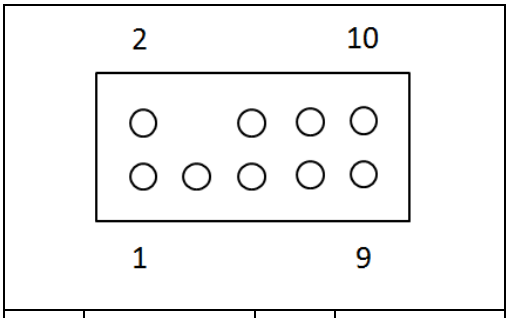
Pin	Define	Pin	Define
1	+5V	2	+5V
3	USBDATA-	4	USBDATA-
5	USBDATA+	6	USBDATA+
7	GND	8	GND
9	Reserved	10	GND

CN13 : SPI Flahs Download Pin Header(For Debug Purpose)



Pin	Define	Pin	Define
1	+V3P3_SPI	2	GND
3	FCH_SPI_CS_N	4	FCH_SPI_CLK
5	FCH_SPI_DATAIN	6	FCH_SPI_DATAOUT
7	N.C.	8	N.C.

CN14 : FPGA Download Pin Header(For Debug Purpose)



Pin	Define	Pin	Define
1	TCK	2	GND
3	TDO	4	NC
5	TMS	6	+V3
7	N.C.	8	N.C.
9	TDI	10	GND

CN15 : GOLDEN-FINGER1 w/ fool-proof

Solder (Bottom) Side			Component (Top) Side		
Golden Finger Pin#	Edge Conn. Pin #	Signal Name	Golden Finger Pin#	Edge Conn. Pin #	Signal Name
B36/A	A	GND	A36/1	1	GND
B35/B	B	SPEAKER -	A35/2	2	SPEAKER + (R)
B34/C	C	SPEAKER -	A34/3	3	SPEAKER + (L)
B33/D	D	IN18	A33/4	4	IN0
B32/E	E	IN19	A32/5	5	IN1
B31/F	F	IN20	A31/6	6	IN2
B30/H	H	IN21	A30/7	7	IN3
B29/J	J	IN22	A29/8	8	IN4
B28/K	K	IN23	A28/9	9	IN5
B27/L	L	IN24	A27/10	10	IN6
B26/M	M	Door 0 (opt.)	A26/11	11	IN7
B25/N	N	Door 1 (opt.)	A25/12	12	IN8
B24/P	P	Door 2 (opt.)	A24/13	13	IN9
B23/R	R	Guide Pin	A23/14	14	Guide Pin

B22/S	S	Door 4 (opt.)	A22/15	15	IN10
B21/T	T	Door 5 (opt.)	A21/16	16	IN11
B20/U	U	IN25	A20/17	17	IN12
B19/V	V	IN26	A19/18	18	IN13
B18/W	W	IN27	A18/19	19	IN14
B17/X	X	IN28	A17/20	20	IN15
B16/Y	Y	HP CNT IN0	A16/21	21	IN16
B15/Z	Z	HP CNT IN1	A15/22	22	IN17
B14/a	a	LAMP OUT12	A14/23	23	LAMP OUT0
B13/b	b	LAMP OUT13	A13/24	24	LAMP OUT1
B12/c	c	LAMP OUT14	A12/25	25	LAMP OUT2
B11/d	d	LAMP OUT15	A11/26	26	LAMP OUT3
B10/e	e	So-clk	A10/27	27	LAMP OUT4
B9/f	f	So-data	A9/28	28	LAMP OUT5
B8/h	h	So-en	A8/29	29	LAMP OUT6
B7/j	j	So-shift	A7/30	30	LAMP OUT7
B6/k	k	PWM OUT0	A6/31	31	LAMP OUT8
B5/l	l	PWM OUT1	A5/32	32	LAMP OUT9
B4/m	m	PWM OUT2	A4/33	33	LAMP OUT10
B3/n	n	PWM OUT3	A3/34	34	LAMP OUT11
B2/p	p	GND	A2/35	35	GND
B1/r	r	GND	A1/36	36	GND

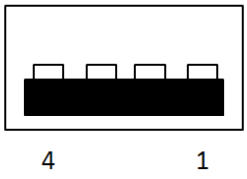
20-pin Golden Finger Pin Definition (PCB & Edge Connector)

Solder (Bottom) Side			Component (Top) Side		
Golden Finger Pin#	Edge Conn. Pin #	Signal	Golden Finger Pin#	Edge Conn. Pin #	Signal
B10/A	A	GND	A10/1	1	GND
B9/B	B	GND	A9/2	2	GND
B8/C	C	+5V	A8/3	3	+5V
B7/D	D	+5V	A7/4	4	+5V
B6/D	E	+12V	A6/5	5	+12V
B5/F	F	+12V + R	A5/6	6	+12V + R
B4/H	H	PWM & GPO 0	A4/7	7	PWM & GPO 1
B3/J	J	Guide Pin	A3/8	8	Guide Pin
B2/K	K	GND	A2/9	9	GND
B1/L	L	GND	A1/10	10	GND

CN16 : PCIE x16 Socket(Support x8 Only)

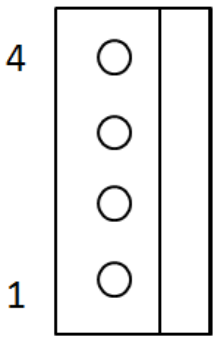
As standard.

CN17 : USB Port 1(USB 2.0)



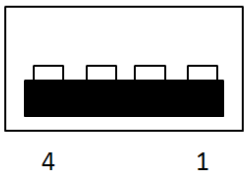
Pin	Define	Pin	Define
1	VCC	3	DATA0+
2	DATA0-	4	GND

CN18 : SATA Power Connector



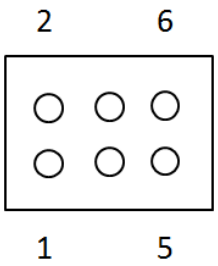
Pin	Define
1	+12V
2	GND
3	GND
4	+5V

CN19 : USB Port 0(USB 2.0)



Pin	Define	Pin	Define
1	VCC	3	DATA0+
2	DATA0-	4	GND

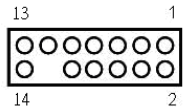
CN20 : DOOR Connector



Pin	Define	Pin	Define
1	DOOR0	2	DOOR1
3	DOOR2	4	NC
5	DOOR4	6	DOOR5

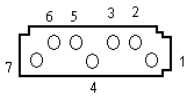
CN21 : expansion board connector for R283

CN22 : LPC Connector



Pin	Define	Pin	Define
1	+3.3V	2	AD 0
3	AD 1	4	AD 2
5	AD 3	6	Frame#
7	PCIERST#	8	+5V
9	CLOCK	10	PME#
11	GND	12	
13	SERIRQ	14	LDRQ

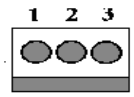
CN23/25 : SATA Port 0/1 Connector



Pin	Define
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND

CN24 : expansion board connector for R283

CN26 : COM4(Simple RS232)



Pin	Define
1	TX
2	RX
3	GND

CN27 : CF SOCKET

Pin	Define	Pin	Define
1	GND	26	CF_CD-1
2	IDE_PDD3	27	IDE_PDD11
3	IDE_PDD4	28	IDE_PDD12
4	IDE_PDD5	29	IDE_PDD13
5	IDE_PDD6	30	IDE_PDD14
6	IDE_PDD7	31	IDE_PDD15
7	IDE_PDCS1_N	32	IDE_PDCS3_N
8	GND	33	GND
9	GND	34	IDE_PDIOR_N
10	GND	35	IDE_PDIOW_N
11	GND	36	CF_PIN36
12	GND	37	IDE_IRQ
13	+5V	38	+5V
14	GND	39	GND
15	GND	40	NC
16	GND	41	IDE_RST_N
17	GND	42	IDE_PDIORDY
18	IDE_PDA2	43	IDE_PDDREQ
19	IDE_PDA1	44	IDE_PDDACK_N
20	IDE_PDA0	45	IDE_ACTP_N

21	IDE_PDD0	46	IDE_PDIAG_N
22	IDE_PDD1	47	IDE_PDD8
23	IDE_PDD2	48	IDE_PDD9
24	IDE_CS16_N	49	IDE_PDD10
25	NC	50	GND

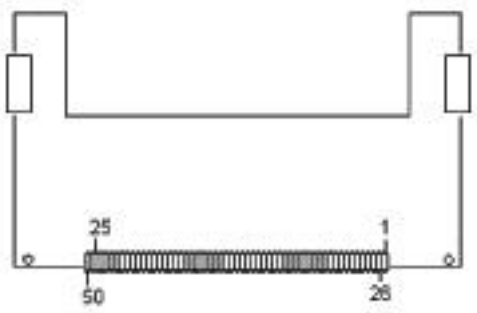
CN28 : COM3(Simple RS232 / CCTALK)

Pin	Define
1	+12V
2	CCTALK
3	GND
4	SOUT
5	SIN
6	GND

2.3 Compact Flash™Card Socket Pin Define

CompactFlash™ card is a small removable mass storage device. It can provide complete PCMCIA-ATA functionality and compatibility plus True IDE functionality compatible with ATA/ATAPI-4.
CompactFlash™ storage products are solid state form factor, it means they contain no moving parts. Thus, it provides users with much greater protection of the data than conventional magnetic disk device.

Pin	Assignment	Pin	Assignment	Pin	Assignment	Pin	Assignment	Pin	Assignment
1	Ground	11	Ground	21	D00	31	D15	41	RESET
2	D03	12	Ground	22	D01	32	CS	42	ORDY
3	D04	13	VCC	23	D02	33	NC	43	DREG
4	D05	14	Ground	24	WP	34	IOR	44	DACK
5	D06	15	Ground	25	NC	35	IOW	45	LED
6	D07	16	Ground	26	NC	36	WE	46	BVD
7	CS	17	Ground	27	D11	37	RDY/BSY	47	D08
8	Ground	18	A02	28	D12	38	VCC	48	D09
9	Ground	19	A01	29	D13	39	SCSE	49	D10
10	Ground	20	A00	30	D14	40	NC	50	Ground



Chapter 3. BIOS Setup

The ROM chip of your GA-5010 board is configured with a customized Basic Input/Output System (BIOS) from AMI BIOS. The BIOS is a set of permanently recorded program routines that give the system its fundamental operational characteristics. It also tests the computer and determines how the computer reacts to instructions that are part of programs.

The BIOS is made up of code and programs that provide the device-level control for the major I/O devices in the system. It contains a set of routines (called POST, for Power-On Self Test) that check out the system when you turn it on. The BIOS also includes CMOS Setup program, so no disk-based setup program is required CMOS RAM stores information for:

- Date and time
- Memory capacity of the appliance
- Type of display adapter installed
- Number and type of disk drives

The CMOS memory is maintained by battery installed on the GA-5010 board. By using the battery, all memory in CMOS can be retained when the system power switch is turned off. The system BIOS also supports easy way to reload the CMOS data when you replace the battery of the battery power lose.

3.1 Quick Setup

In most cases, you can quickly configure the system by choosing the following main menu options:

1. Choose "Exit" ➔ "Load Optimal Defaults" from the main menu. This loads the setup default values from the BIOS Features Setup and Chipset Features Setup screens.
2. Choose "Main" & "Advanced" from the main menu. This option lets you configure the date and time, hard disk type, floppy disk drive type, primary display and more.

3. In the main menu, press F10 ("Save Changes and Exit") to save your changes and reboot the system.

3.2 Entering the CMOS Setup Program

Use the CMOS Setup program to modify the system parameters to reflect the options installed in your system and to customize your system. For example, you should run the Setup program after you:

- Received an error code at startup
- Install another disk drive
- Use your system after not having used it for a long time
- Find the original setup missing
- Replace the battery
- Change to a different type of CPU
- Run the AMI Flash program to update the system BIOS

Run the CMOS Setup program after you turn on the system. On-screen instructions explain how to use the program.

Enter the CMOS Setup program's main menu as follows:

1. Turn on or reboot the system. After the BIOS performs a series of diagnostic checks, the following message appears:
   "Press DEL to enter SETUP"
2. Press the <DEL> key to enter CMOS Setup program. The main menu appears:

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
BIOS Information
BIOS Vendor American Megatrends
Core Version 4.6.5.3
Compliancy UEFI 2.3; PI 1.2
Project Version G5010006
Build Date and Time 03/04/2013 16:12:39
Memory Information
Total Memory 4096 MB (DDR3)
System Language [English]
System Date [Mon 03/04/2013]
System Time [09:02:33]
Access Level Administrator
Choose the system default language
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.

Main: For changing the basic system configurations.

Advanced: For changing the advanced system settings.

Chipset: For changing the chipset settings.

Boot: For changing the system boot configurations.

Security: Use this menu to set User and Supervisor Passwords.

Save&Exit: For selecting the exit options and loading default settings.

In the main menu, press <F4> ("Save Changes and Exit") to save your changes and reboot the system. Press <ESC> ("Exit") to ignores your changes and exits the program.

3. Choose a setup option with the arrow keys and press <Enter>. See the following sections for a brief description of each setup option.

3.3 Menu Options

The main menu options of the CMOS Setup program are described in the following and the following sections of this chapter.

BIOS Information: Displays the auto-detected BIOS information.

BIOS Vendor:

Core Version:

Compliancy:

Project Version:

Build Date and Time:

Memory Information: Displays the auto-detected system memory.

Total Memory:

System Date [Day mm/dd/yyyy]: This item allows you to set the system date.

SystemTime: [hour:min:sec]: This item allows you to set the system time.

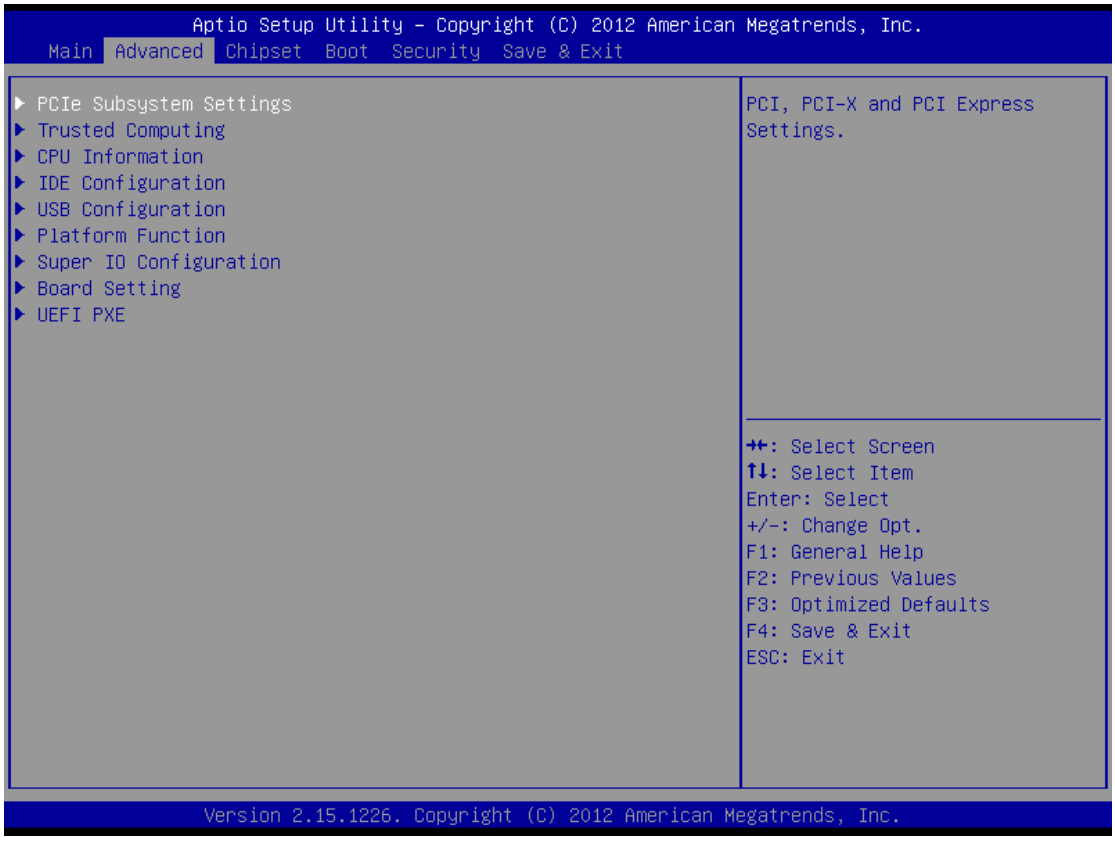
Access Level: This item allows you to set the authority to access system.

3.4 Advanced Menu

The Advanced menu items allow you to change the settings for the CPU and other system devices.

⇩Use the Advanced Setup option as follows:

1. Choose "Advanced" from the main menu. The following screen appears:

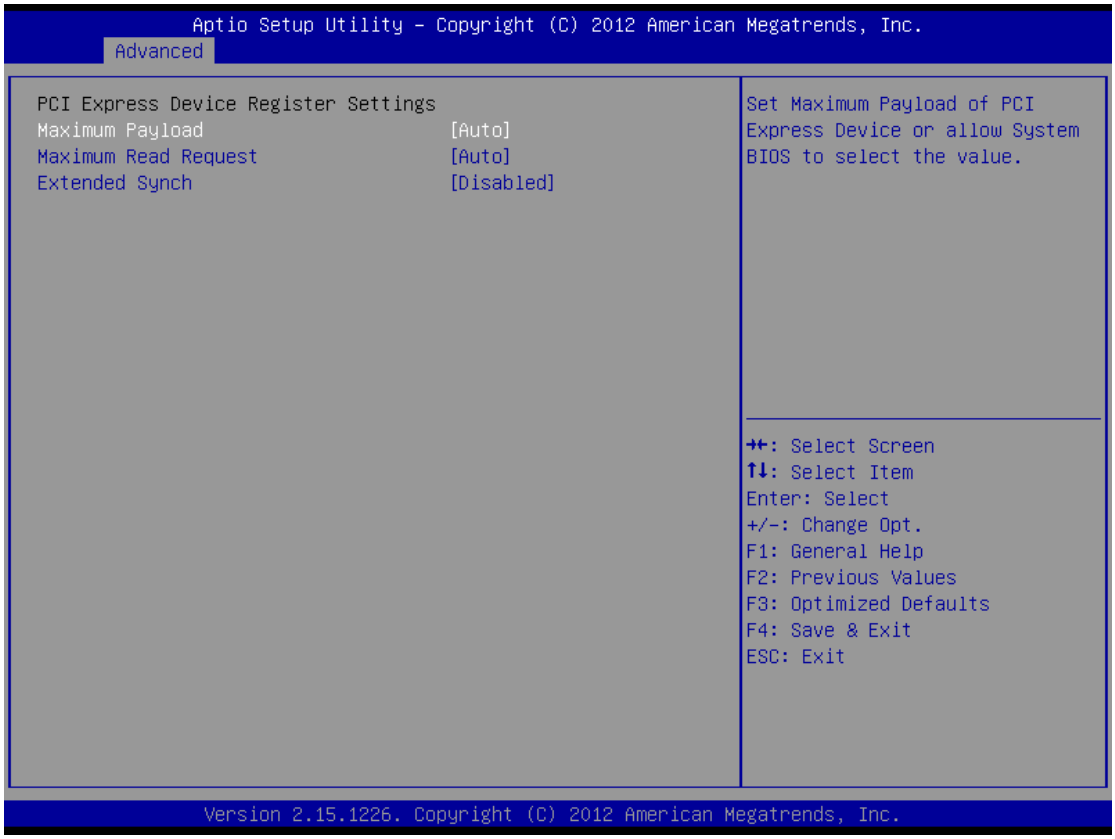


2. Use the arrow keys to move between fields. Modify the selected field using the PgUP/PgDN/+/- keys. Some fields let you enter numeric values directly.

3. After you have finished with the Advanced setup, press the <ESC> key to return to the main menu.

3.4.1 PCIe Subsystem Settings

This sub menu allows you to set or change the configurations for the TPM function.


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Advanced
PCI Express Device Register Settings
Maximum Payload [Auto]
Maximum Read Request [Auto]
Extended Synch [Disabled]
Set Maximum Payload of PCI Express Device or allow System BIOS to select the value.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.

PCI Express Device Register Settings

Maximum Payload [Auto]

This item allows you to Set Maximum payload of PCI Express Device or allow System BIOS to select the value.

Maximum Read Request [Auto]

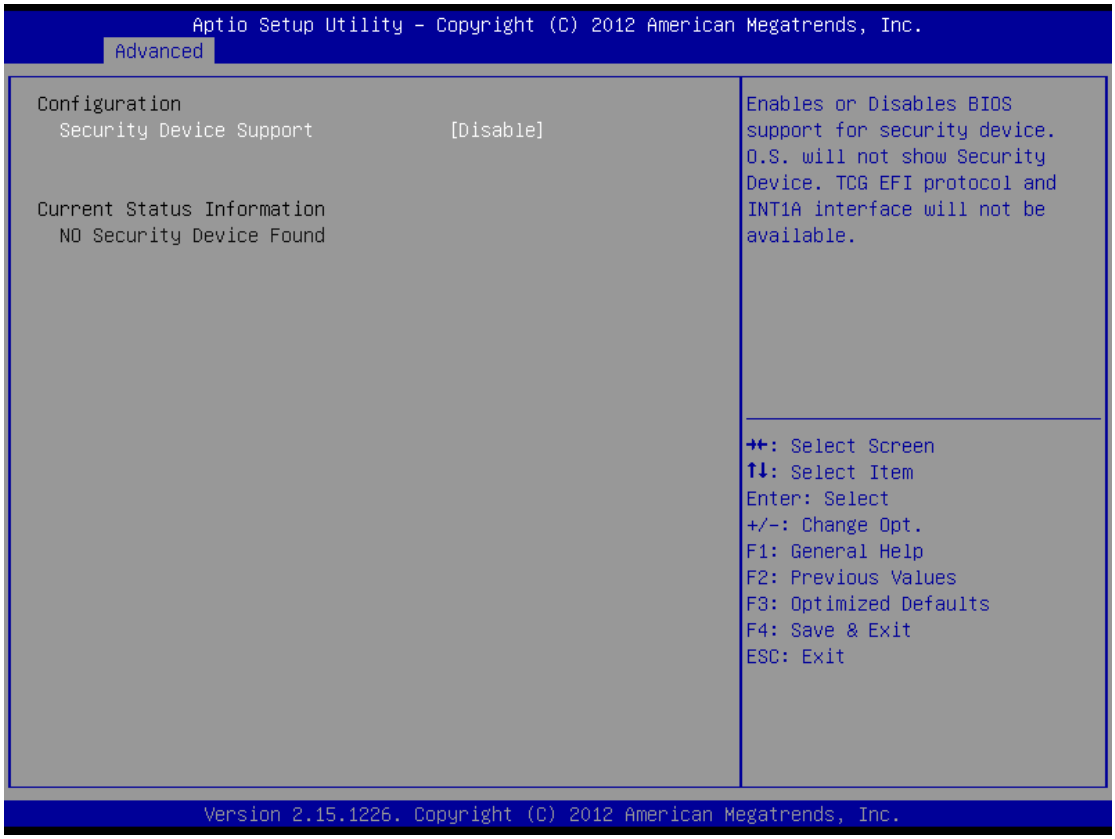
This item allows you to Set Maximum Read Request of PCI Express Device or allow System BIOS to select the value.

Extended Synch [Disable]

This item allows you to Enable/Disable Extended Synch.

3.4.2 Trusted Computing

This sub menu allows you to set or change the configurations for the TPM function.


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Advanced
Configuration
Security Device Support [Disable]
Current Status Information
NO Security Device Found
Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.

Configuration

TPM State: [Disabled]

This item allows you to enable or disable security device.

[Note]: Your computer will reboot during restart in order to change state of the device.

Pending operation: [None]

Current Status Information

This information shows current status of TPM with following items.

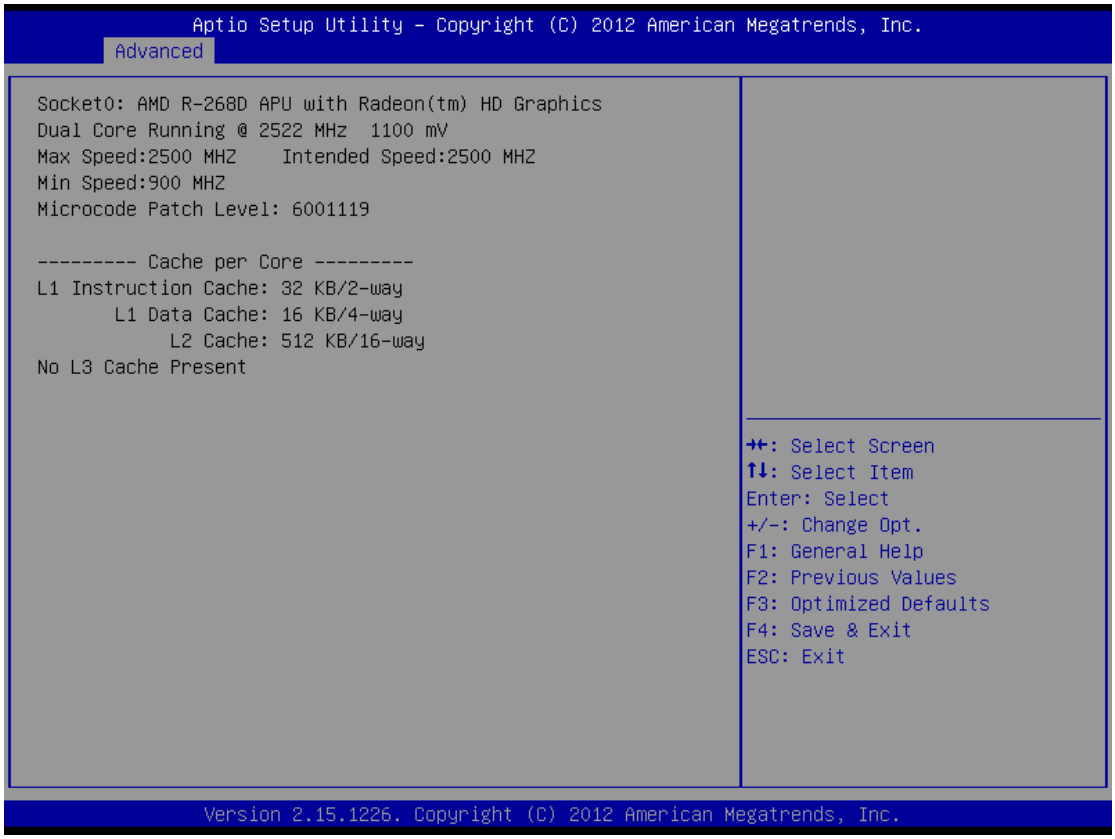
TPM Enabled Status: [Disabled]

TPM Active Status: [Deactivated]

TPM Owner Status: [UnOwned]

3.4.3 CPU Information

This sub menu shows the CPU-related information which is automatically detected by BIOS.

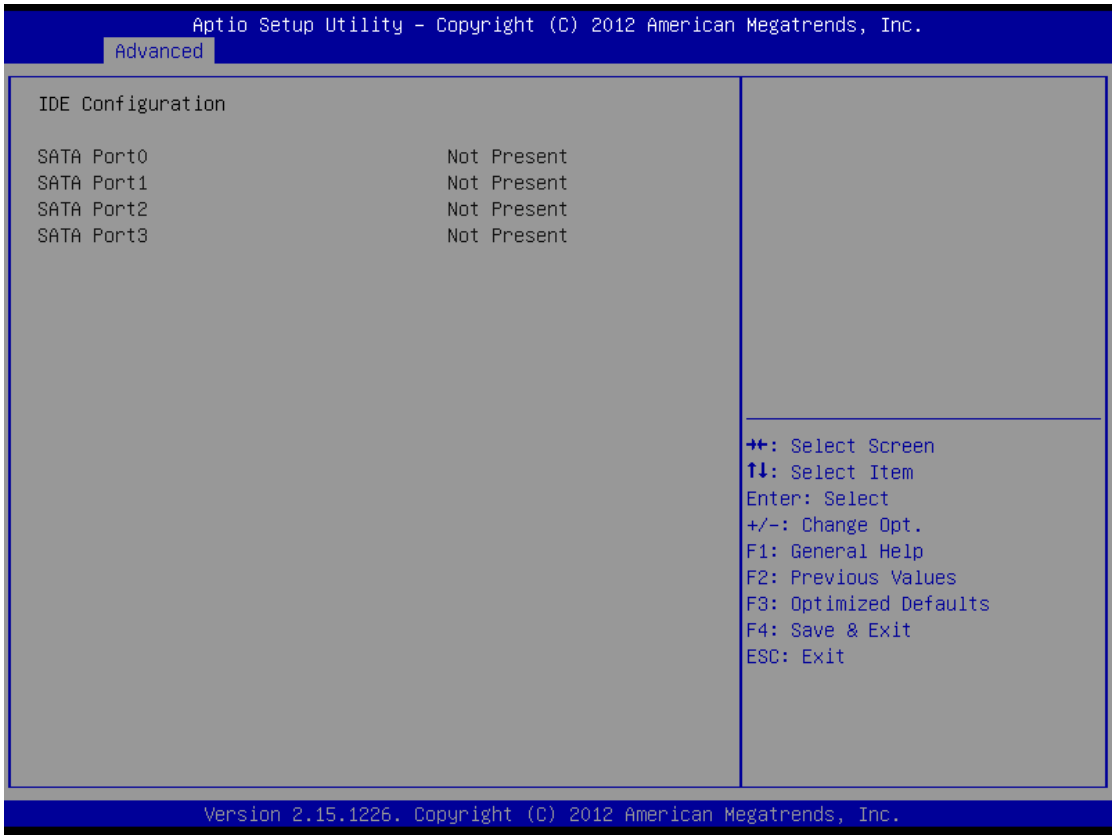

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Advanced
Socket0: AMD R-268D APU with Radeon(tm) HD Graphics
Dual Core Running @ 2522 MHz 1100 mV
Max Speed:2500 MHZ Intended Speed:2500 MHZ
Min Speed:900 MHZ
Microcode Patch Level: 6001119
--------- Cache per Core ---------
L1 Instruction Cache: 32 KB/2-way
L1 Data Cache: 16 KB/4-way
L2 Cache: 512 KB/16-way
No L3 Cache Present
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.

CPU Information

This information shows CPU information which using in the system. CPU information includes messages like processor type, power consumption under running frequency, operating speed as well as cache size.

3.4.4 IDE Configuration

This sub menu shows the IDE/SATA device information which is automatically detected by BIOS.



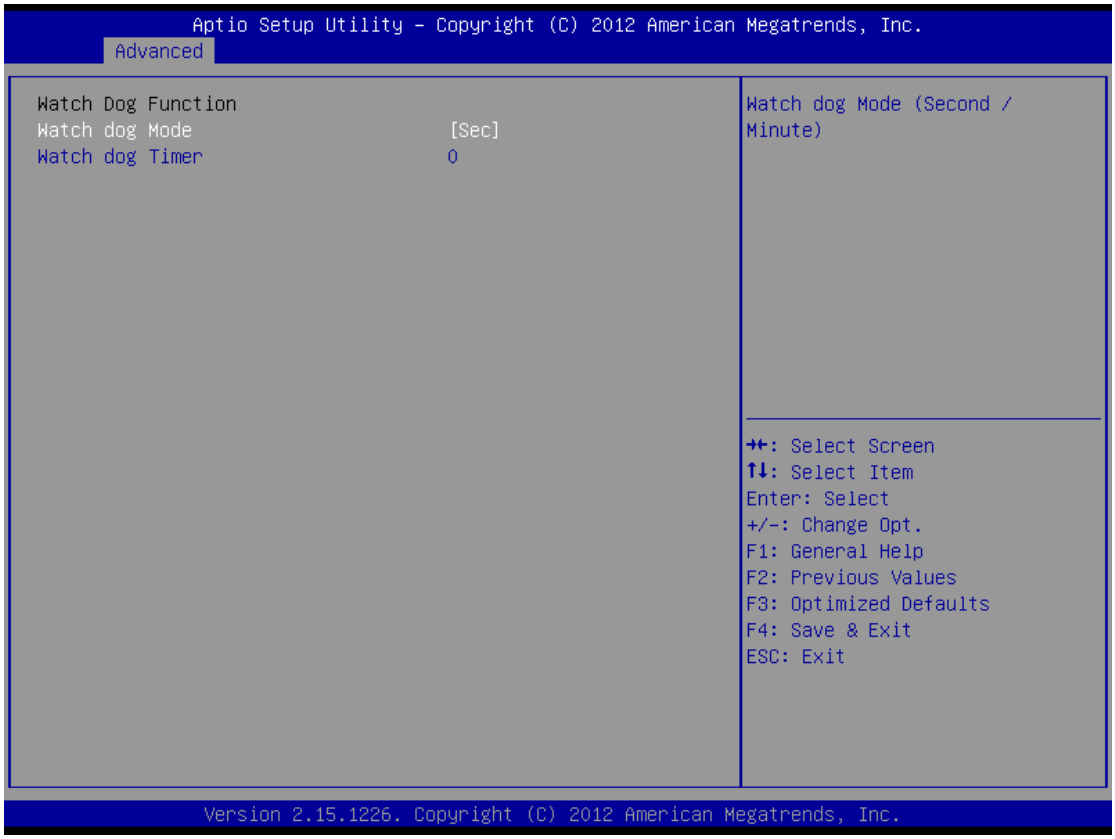
IDE Configuration

3.4.5 USB Configuration

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Advanced
USB Configuration
USB Devices:
1 Drive, 1 Keyboard
Mass Storage Devices:
A-DATA SSD S596 256G [Auto]
Mass storage device emulation type. 'AUTO' enumerates devices according to their media format. Optical drives are emulated as 'CDROM', drives with no media will be emulated according to a drive type.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.

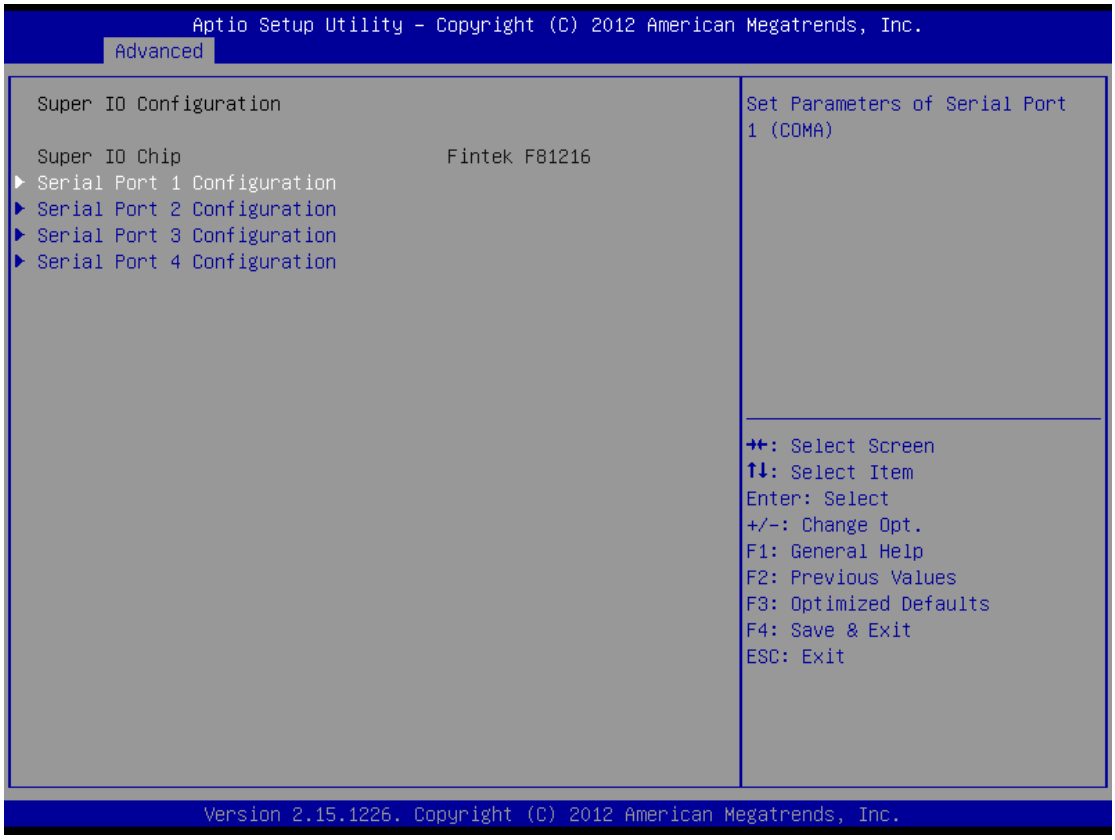
This sub-menu allows you to set the parameters to support USB devices you are going to use. Mass storage will be detected automatically by system.

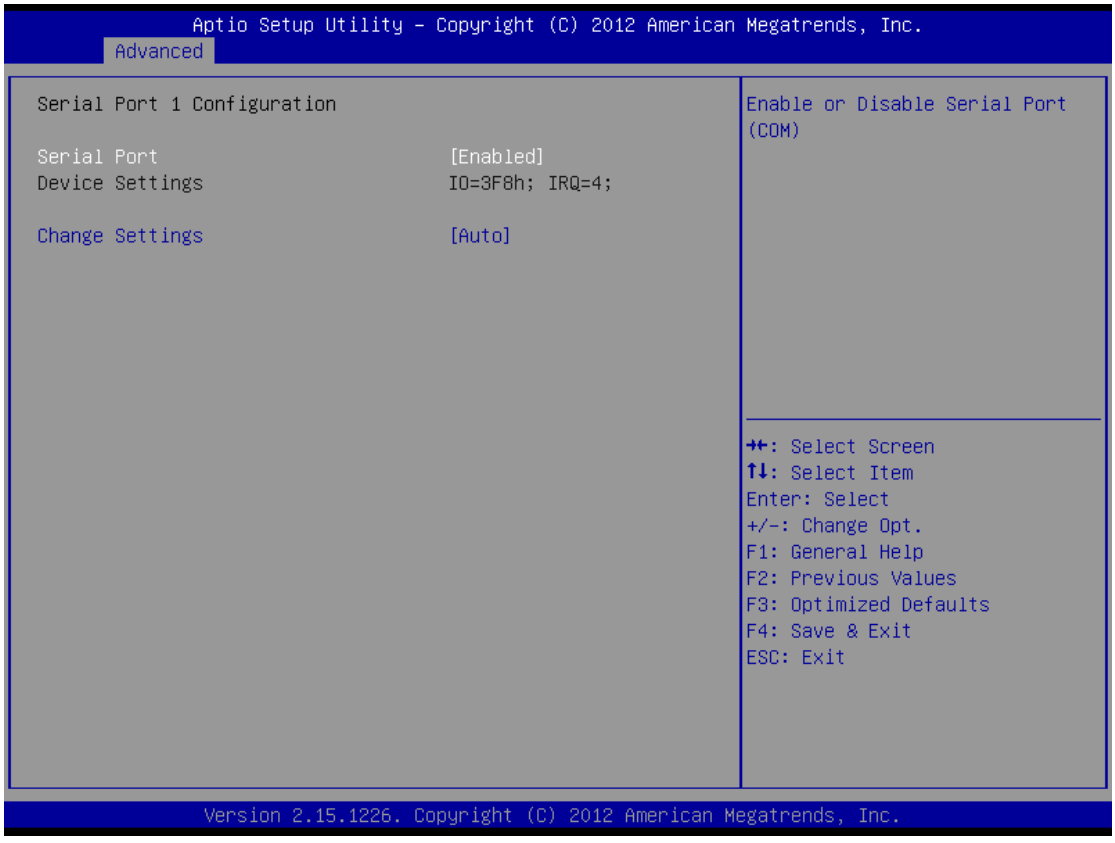
3.4.6 Platform Function



This menu allows you to setup Watch-Dog, the timer can be set in second or minute mode.

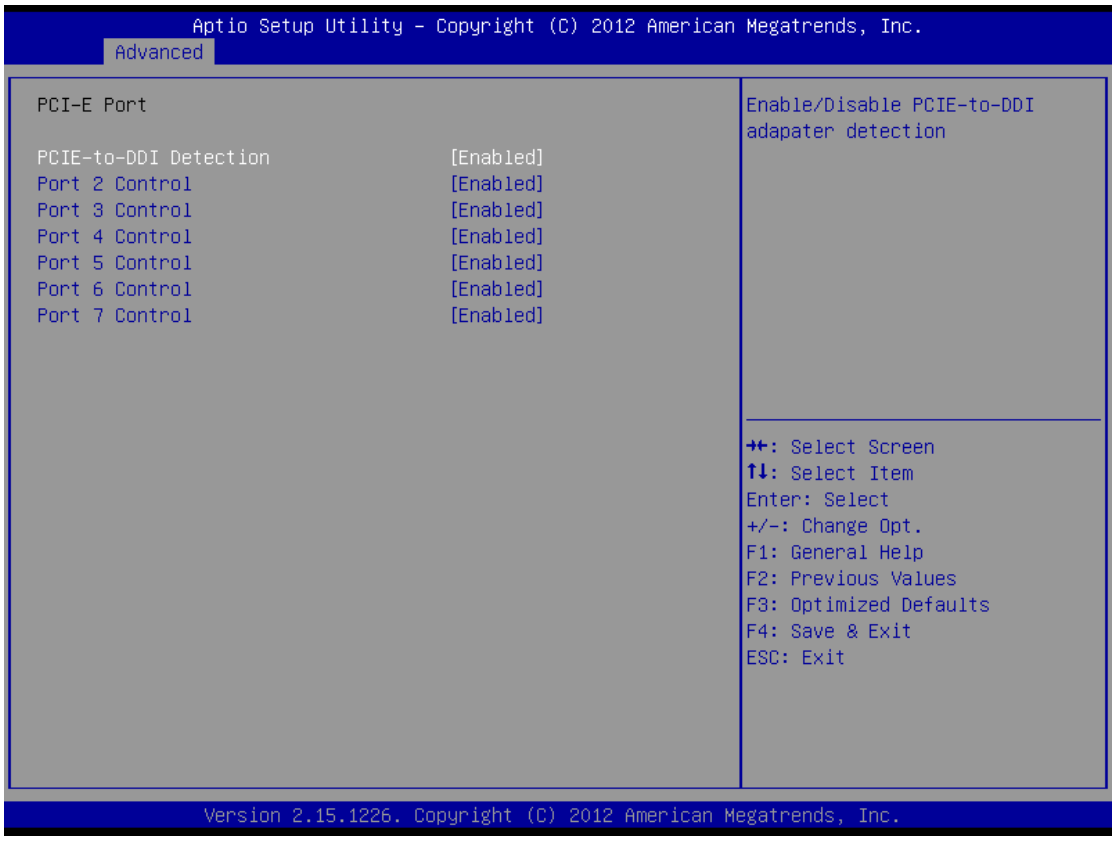
3.4.7 Super IO Configuration


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Advanced
Super IO Configuration
Super IO Chip Fintek F81216
Serial Port 1 Configuration
Serial Port 2 Configuration
Serial Port 3 Configuration
Serial Port 4 Configuration
Set Parameters of Serial Port 1 (COMA)
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.



Super IO function provides 4 ports IO for various control. Those ports can be configured respectively.

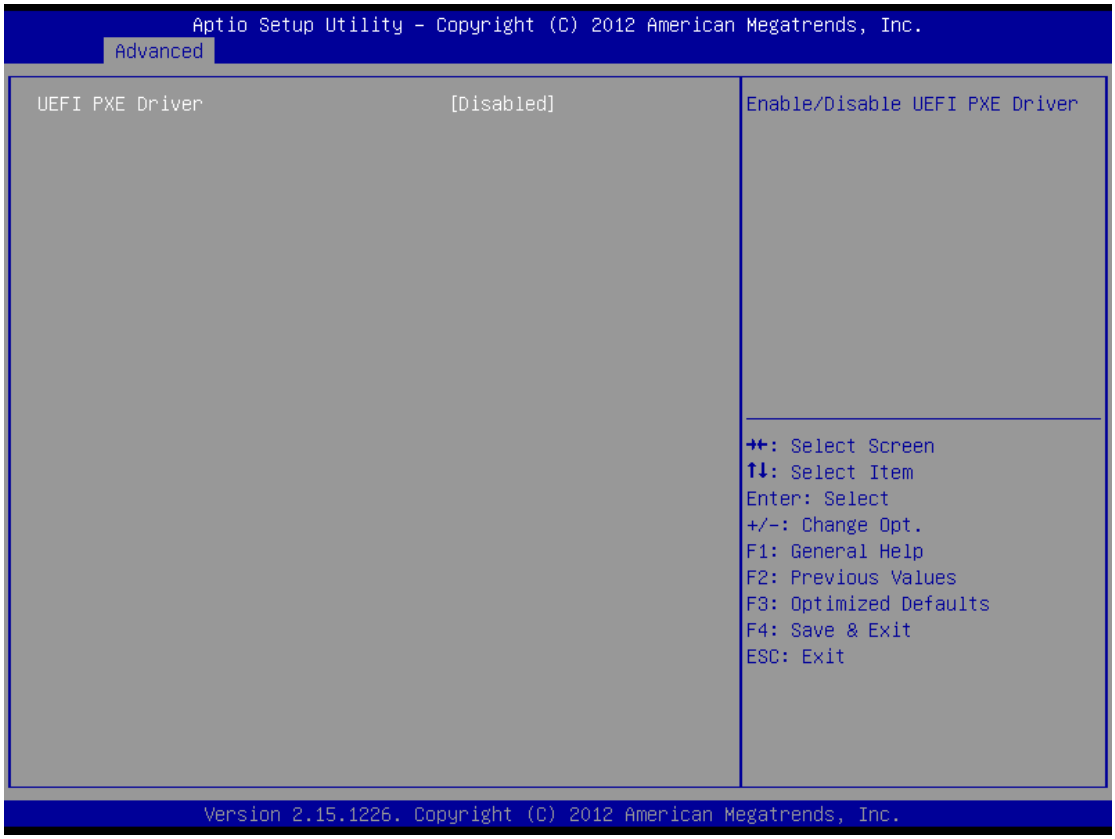
3.4.8 Board Setting



PCI-E Port

This menu allows you to Enable/Disable specific card or device in system.

3.4.9 UEFI PXE



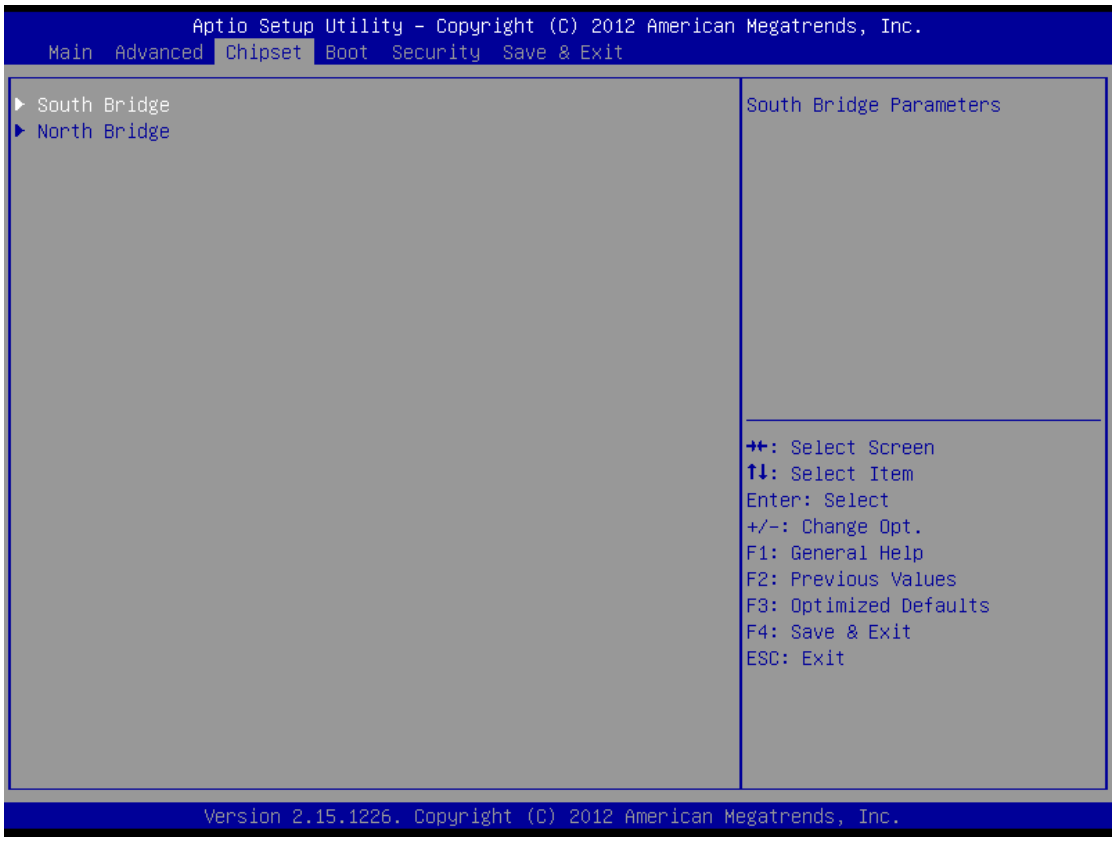
UEFI PXE Driver

This menu allows you to Enable/Disable PXE Driver.

3.5 Chipset Menu

⇩**Use the Chipset Setup option as follows:**

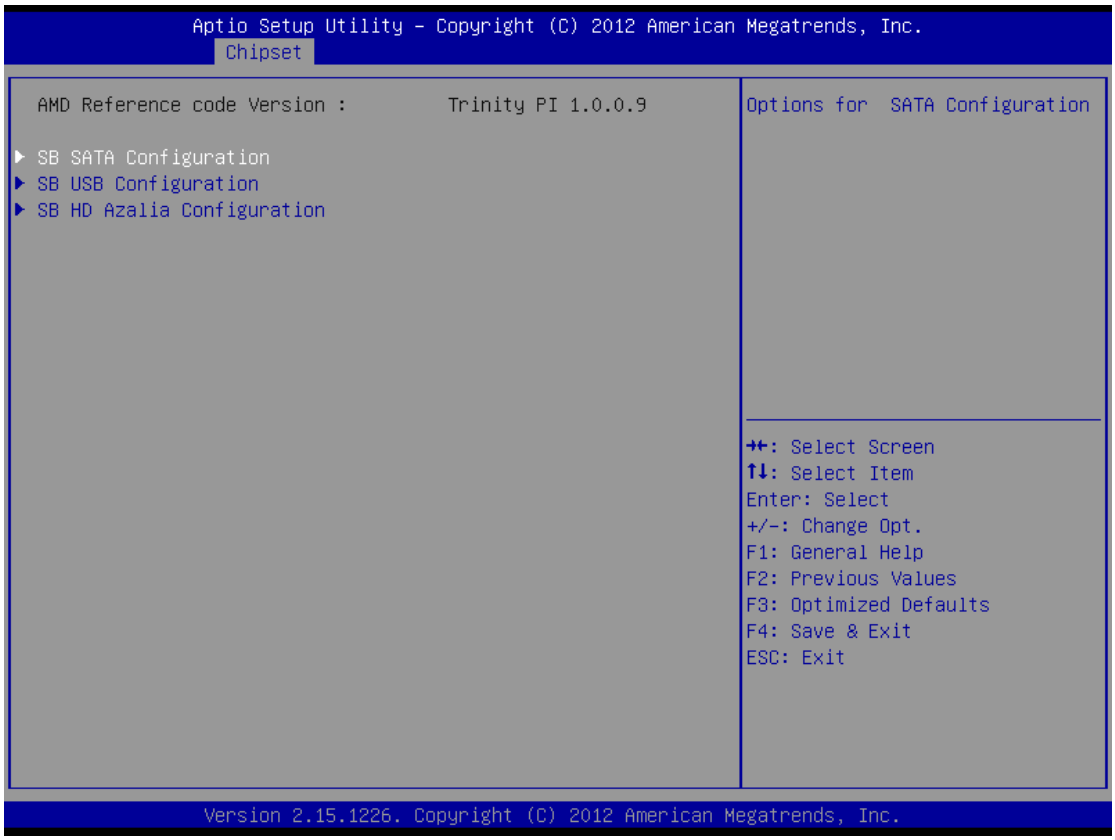
1. Choose "Chipset" from the main menu. The following screen appears.



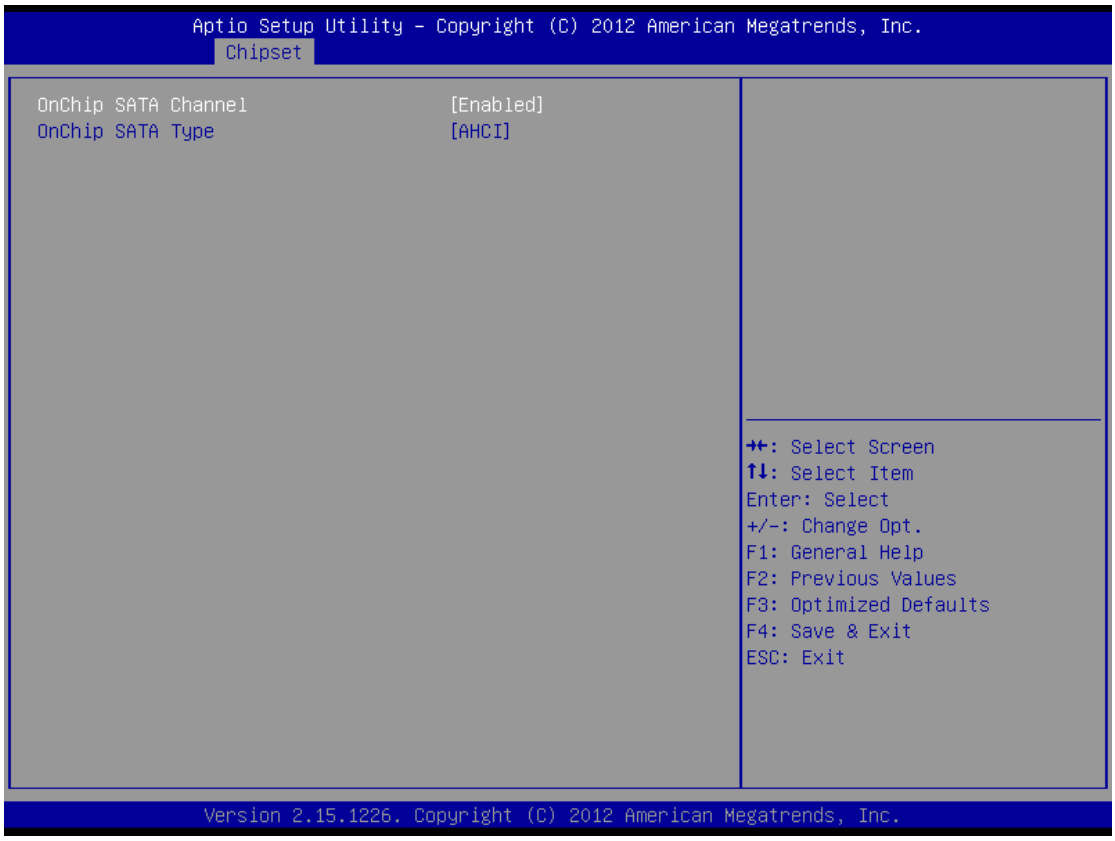
2. Move between items and select values by using the arrow keys. Modify the selected field the PgUP/PgDN keys. For information on the various options, press <F1> key.

3. After you have finished with the Chipset Setup, press the <ESC> key to return to the main menu.

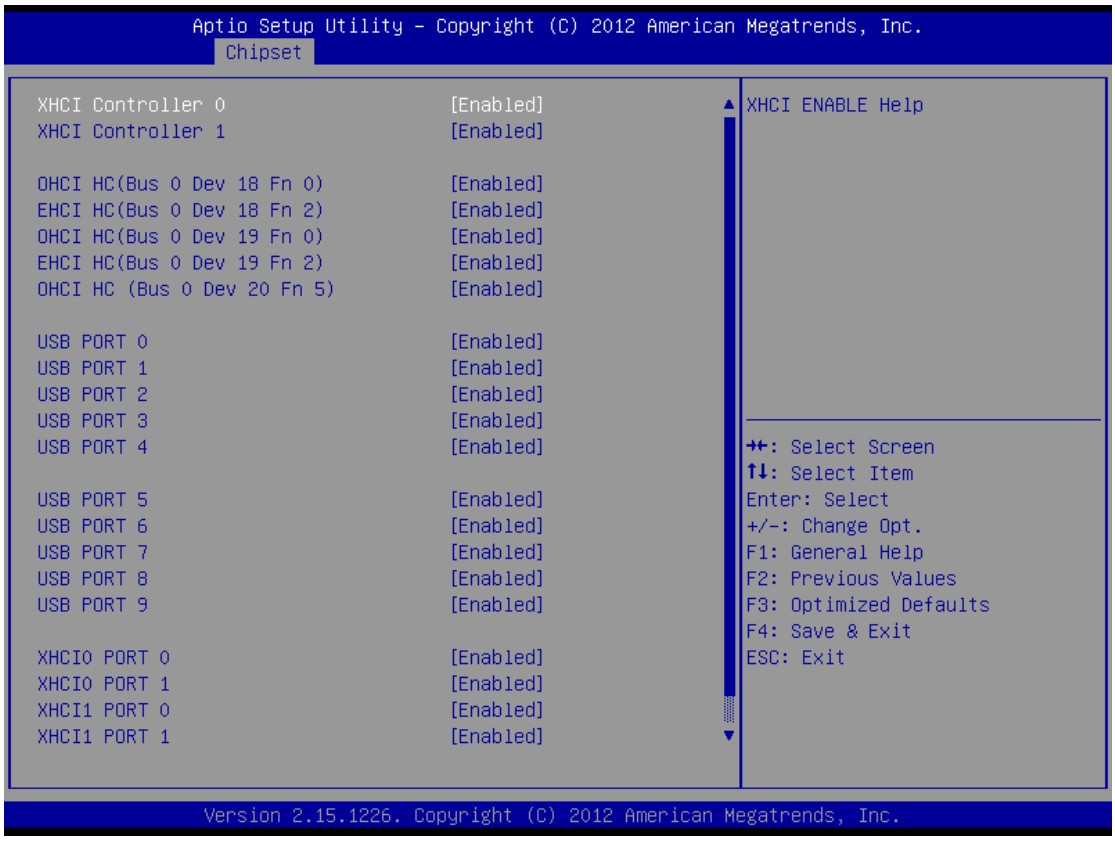
3.5.1 South Bridge



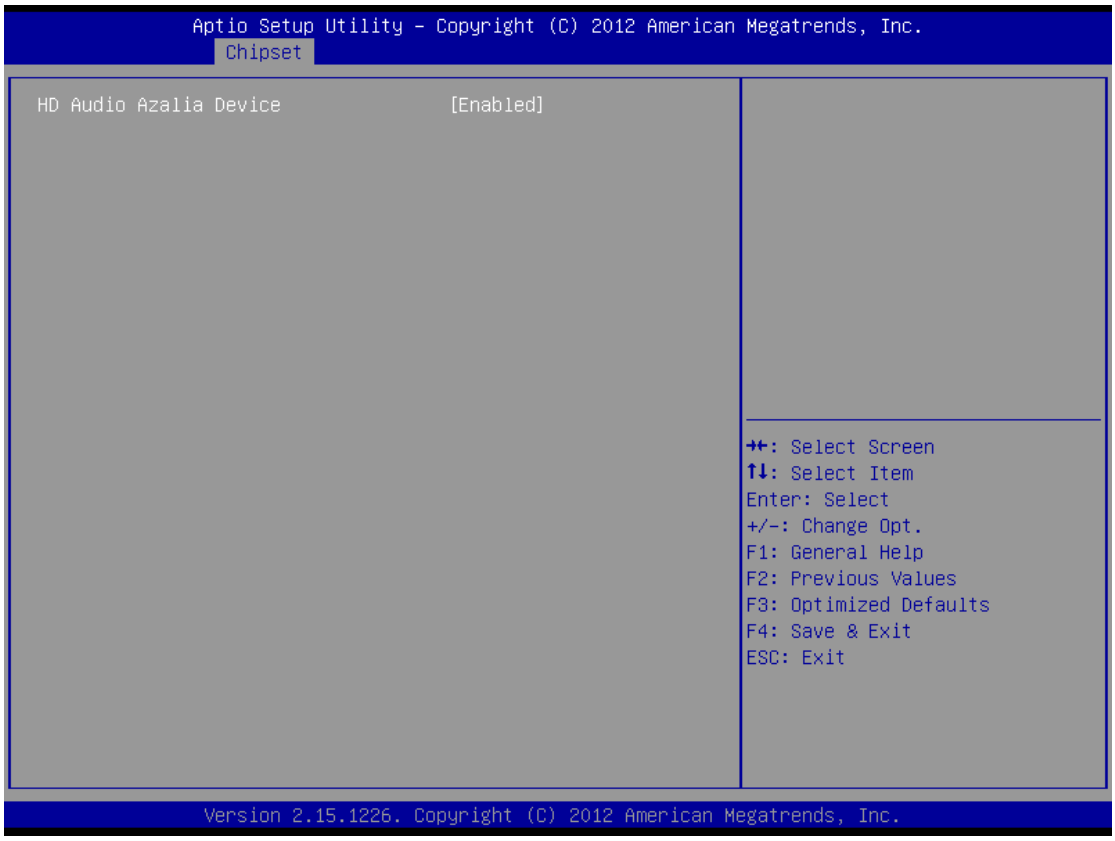
It allows you to configure the parameters of South Bridge, includes SATA, USB and Audio etc…



In this submenu, it allows you to enable/disable SATA and change SATA type.

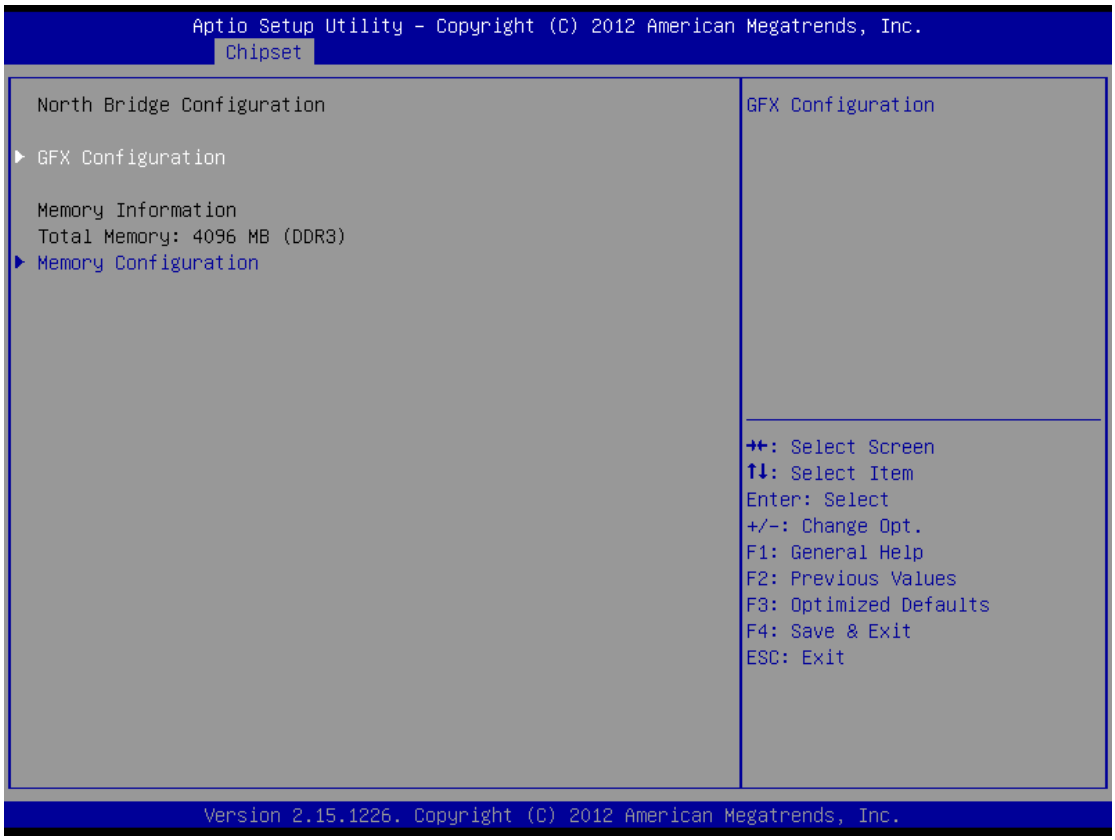

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Chipset
XHCI Controller 0 [Enabled]
XHCI Controller 1 [Enabled]
OHCI HC(Bus 0 Dev 18 Fn 0) [Enabled]
EHCI HC(Bus 0 Dev 18 Fn 2) [Enabled]
OHCI HC(Bus 0 Dev 19 Fn 0) [Enabled]
EHCI HC(Bus 0 Dev 19 Fn 2) [Enabled]
OHCI HC (Bus 0 Dev 20 Fn 5) [Enabled]
USB PORT 0 [Enabled]
USB PORT 1 [Enabled]
USB PORT 2 [Enabled]
USB PORT 3 [Enabled]
USB PORT 4 [Enabled]
USB PORT 5 [Enabled]
USB PORT 6 [Enabled]
USB PORT 7 [Enabled]
USB PORT 8 [Enabled]
USB PORT 9 [Enabled]
XHCI0 PORT 0 [Enabled]
XHCI0 PORT 1 [Enabled]
XHCI1 PORT 0 [Enabled]
XHCI1 PORT 1 [Enabled]
XHCI ENABLE Help
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.

In this submenu, it allows you enable/disable to support XHCI.

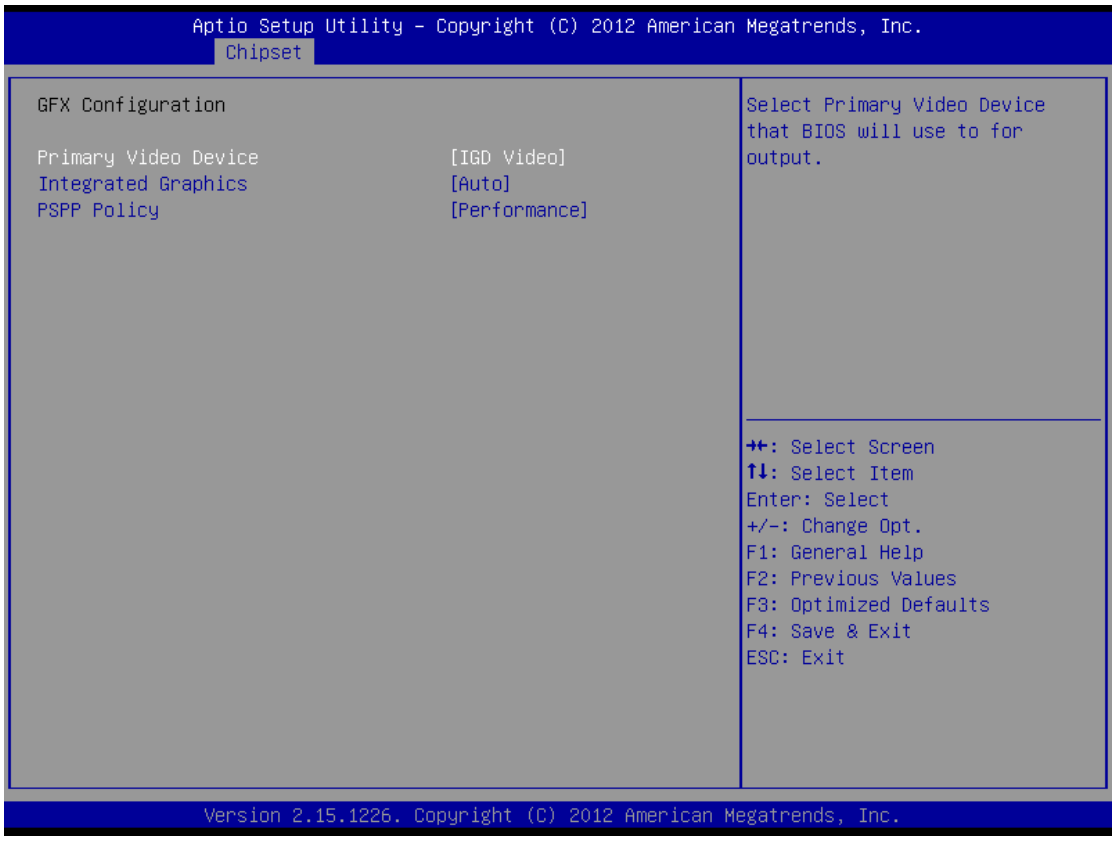


In this submenu, it allows you to enable/disable the audio device.

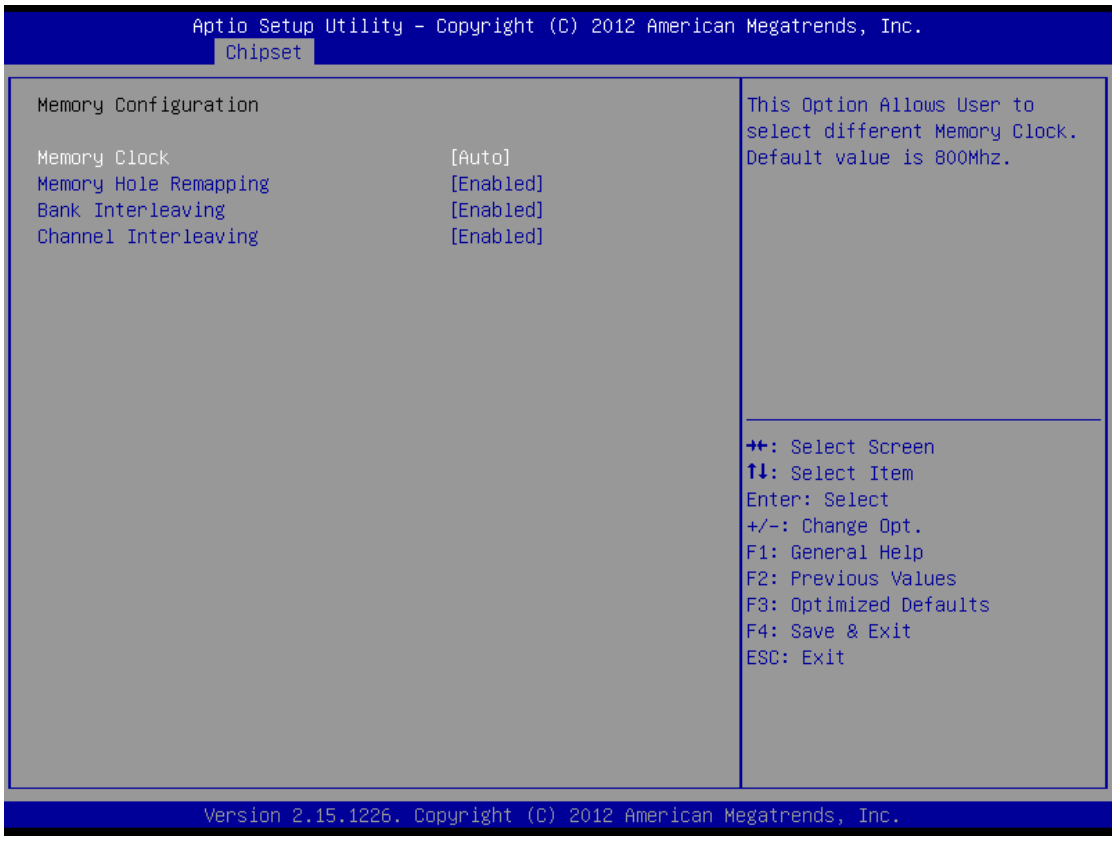
3.5.2 North Bridge



It allows you to configure the parameter of North Bridge, includes clock, timing, VGA frame buffer and etc..


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Chipset
GFX Configuration
Primary Video Device [IGD Video]
Integrated Graphics [Auto]
PSPP Policy [Performance]
Select Primary Video Device that BIOS will use to for output.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.

In this submenu, it allows you select video device in system for output.

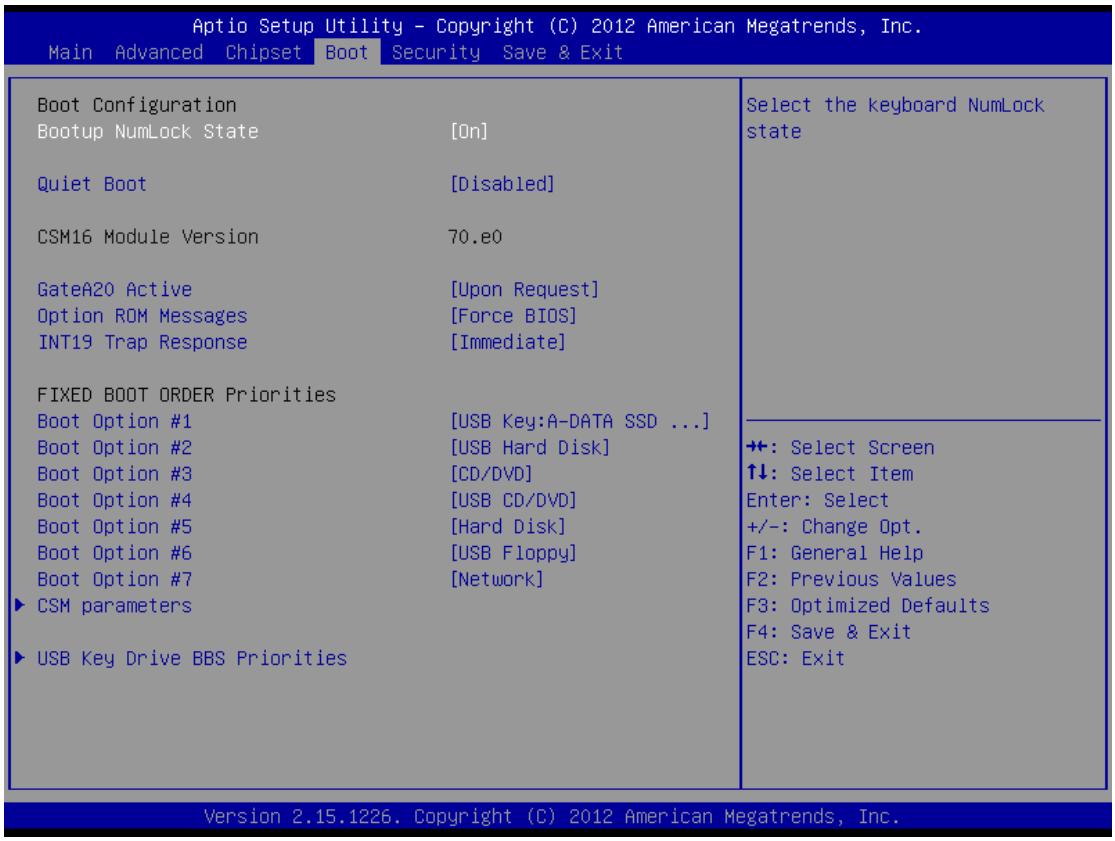

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Chipset
Memory Configuration
Memory Clock [Auto]
Memory Hole Remapping [Enabled]
Bank Interleaving [Enabled]
Channel Interleaving [Enabled]
This Option Allows User to select different Memory Clock. Default value is 800Mhz.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.

In this submenu, it allows you setup memory parameters for specific memory, like clock, operation method.

3.6 Boot Menu

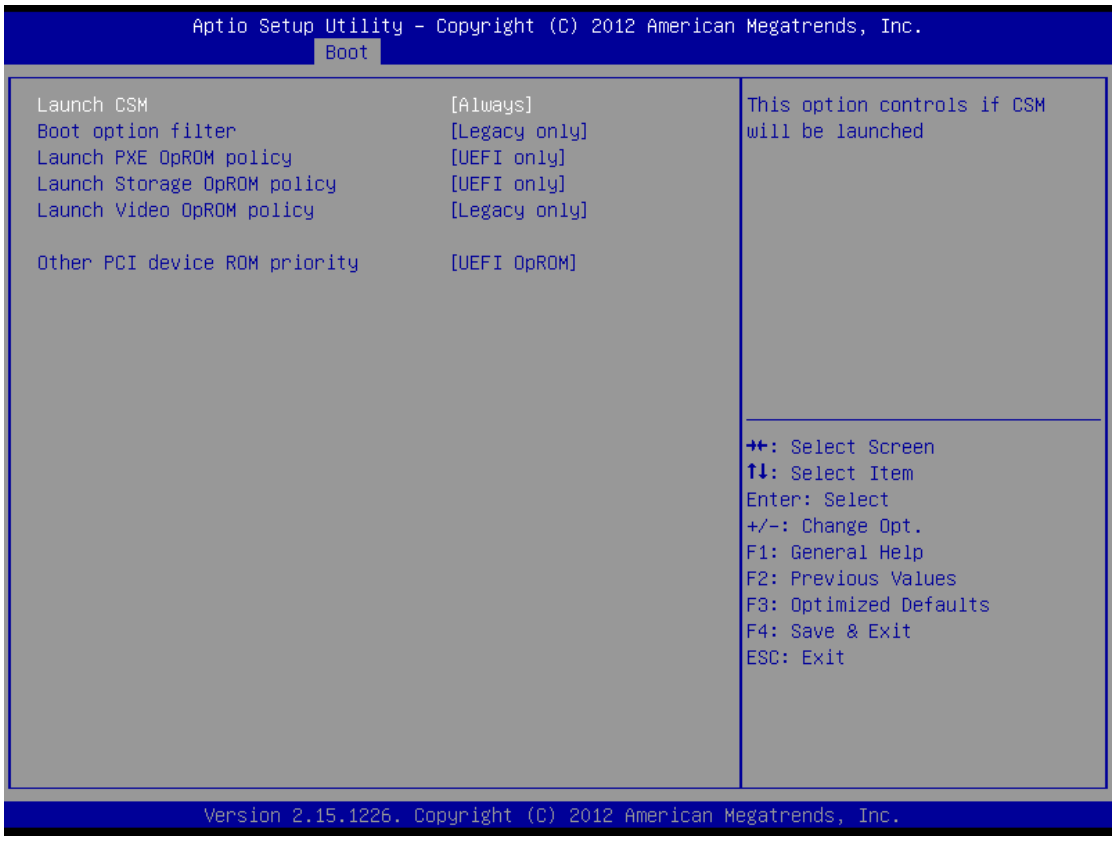
Use the Boot Setup option as follows:

1. Choose "Boot" from the main menu. The following screen appears:

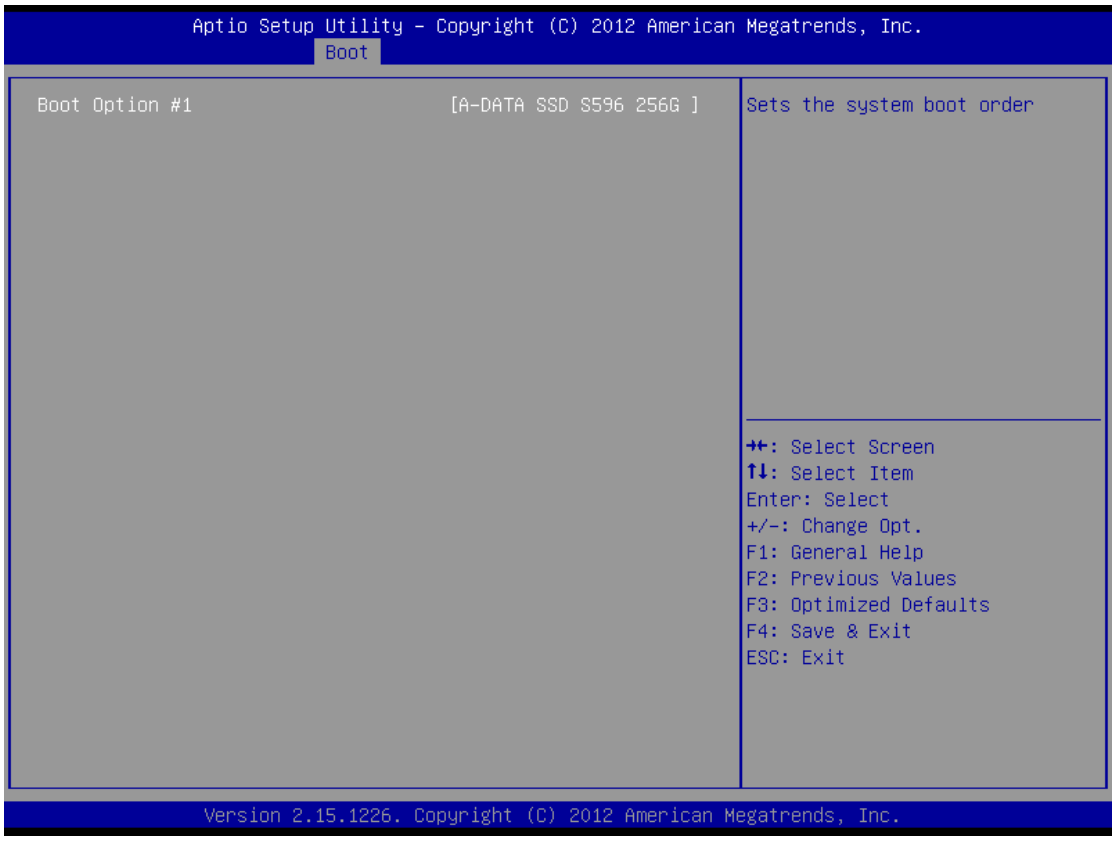

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
Boot Configuration
Bootup NumLock State [On]
Quiet Boot [Disabled]
CSM16 Module Version 70.e0
GateA20 Active [Upon Request]
Option ROM Messages [Force BIOS]
INT19 Trap Response [Immediate]
FIXED BOOT ORDER Priorities
Boot Option #1 [USB Key:A-DATA SSD ...]
Boot Option #2 [USB Hard Disk]
Boot Option #3 [CD/DVD]
Boot Option #4 [USB CD/DVD]
Boot Option #5 [Hard Disk]
Boot Option #6 [USB Floppy]
Boot Option #7 [Network]
CSM parameters
USB Key Drive BBS Priorities
Select the keyboard NumLock state
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.

2. Move between items and select values by using the arrow keys. Modify the selected fields using the PnUP/PgDN Keys. For information on the various options, press <F1> key.

3. After you have finished with the Boot setup, press the <ESC> key to return to the main menu.


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Boot
Launch CSM [Always]
Boot option filter [Legacy only]
Launch PXE OpROM policy [UEFI only]
Launch Storage OpROM policy [UEFI only]
Launch Video OpROM policy [Legacy only]
Other PCI device ROM priority [UEFI OpROM]
This option controls if CSM will be launched
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.

In this submenu, it allows you to setup CSM.

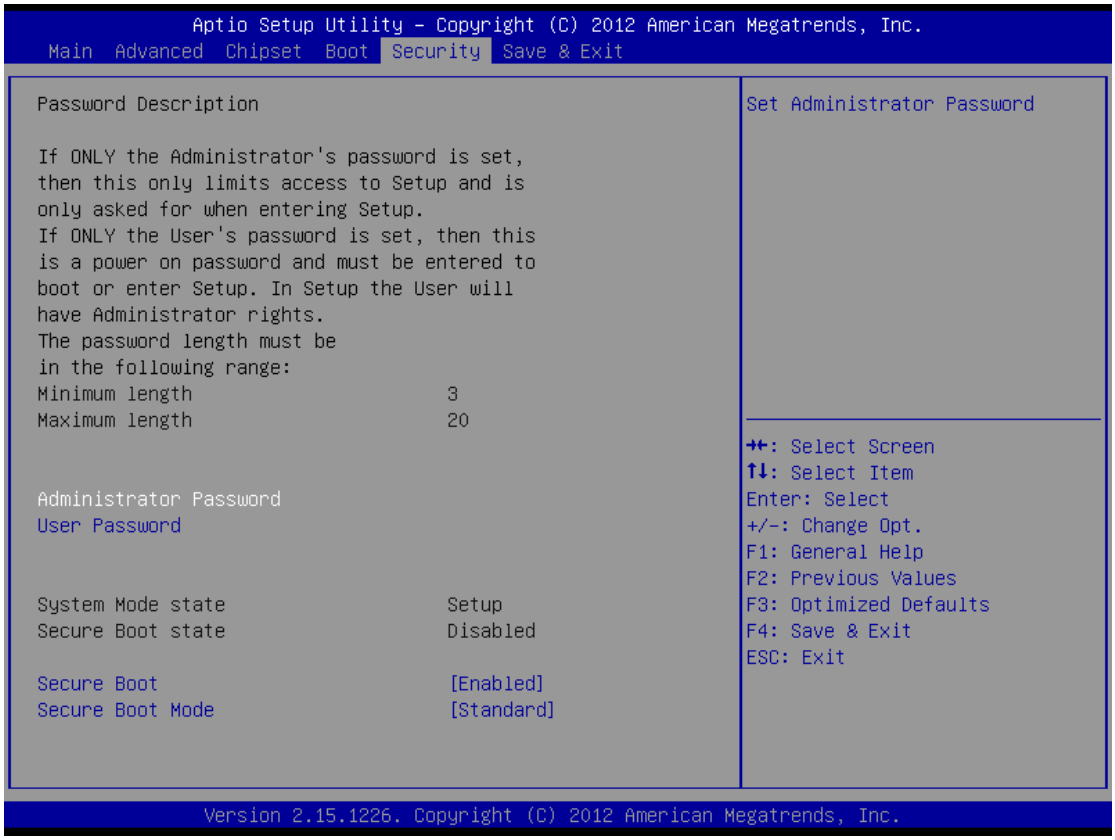


In this submenu, it allows you to setup the system boot order.

3.7 Security Menu

⇩**Use the Security Setup option as follows:**

1. Choose "Security" from the main menu. The following screen appears:


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
Password Description
If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup.
If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights.
The password length must be in the following range:
Minimum length 3
Maximum length 20
Administrator Password
User Password
System Mode state Setup
Secure Boot state Disabled
Secure Boot [Enabled]
Secure Boot Mode [Standard]
Set Administrator Password
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.

2. Move between items and select values by using the arrow keys. Modify the selected fields using the PgUP/PgDN keys. Please press the <F1> key for information on the various options.

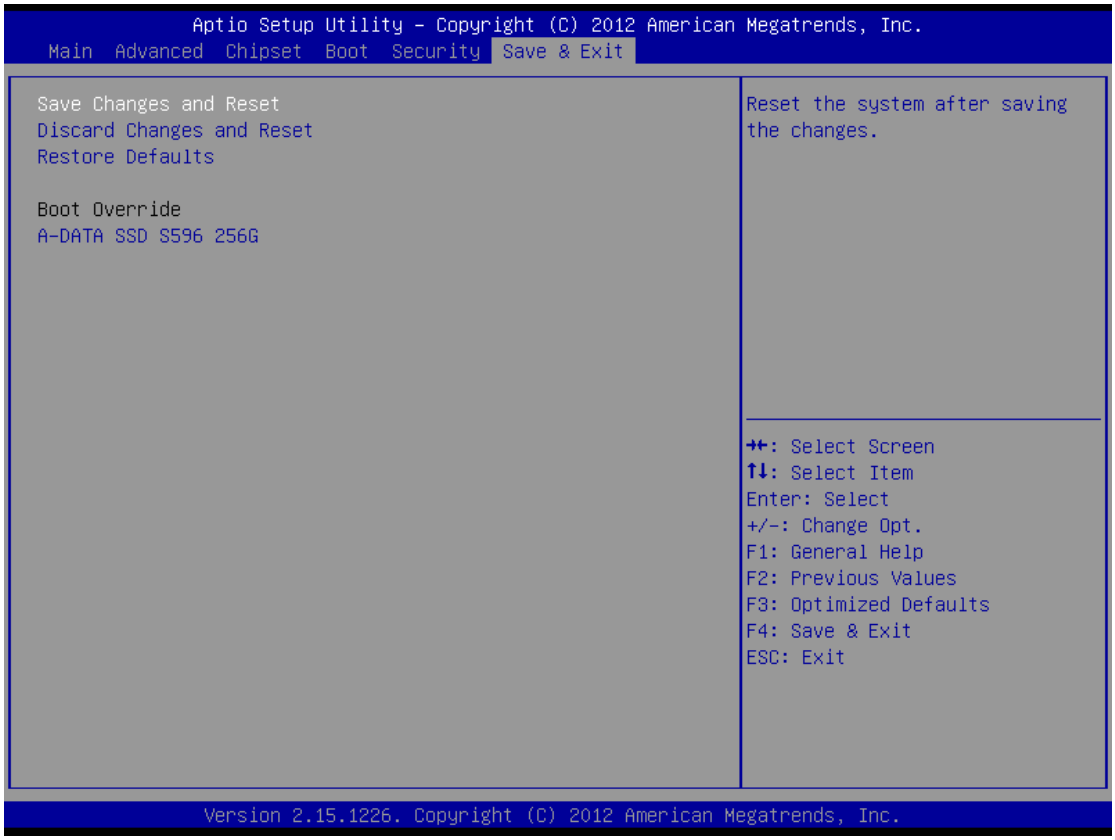
3. After you have finished with the Security setup, press the <ESC> key to return to the main menu.

3.8 Exit

The item allows you to save or discard your changes to the BIOS items, and load the optimal defaults or failsafe defaults for the BIOS items.

⇩Use the Exit option as follows:

1. Choose "Exit" from the main menu, the following screen appears.


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
Save Changes and Reset
Discard Changes and Reset
Restore Defaults
Boot Override
A-DATA SSD S596 256G
Reset the system after saving the changes.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.

2. Move between items and select values by using the arrow keys. Modify the selected fields using the PgUP/PgDN keys. For information on the various options, please press <F1> key.

3. Please press the <ESC> key to return the main menu after finishing with the Exit Options.

Appendix A: Development Kit (optional)

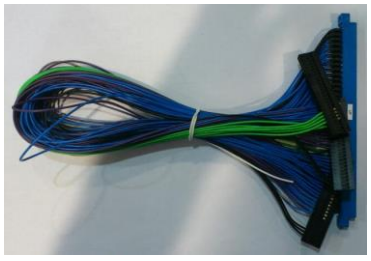
The GA-5010 offers R217A Gaming I/O testing board and some cables for development use.

DK-GA5010-01

Item & Description	Part No.	Qty
Gaming I/O testing board	R217A-01	1
72 pin golden finger cable w/ fool-proof	46L-G00028-00	1
小 4p→大 4p*2 power cable, 30cm /RoHS	46L-S4B402-00	1
SATA cable 35cm	46L-SATA07-00	1
Dual port USB cable 25cm	46L-IUSB01-00	1

R217A-01

46L-G00028-00



46L-S4B402-00

46L-SATA07-00

46L-IUSB01-00